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REPORT OF

STATE FISH COMMISSIONERS

From October 1, 1906 to September 30, 1908.

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REPORT OF THE COMMISSION.

To His Excellency, Hon. Chas. S. Deneen, Governor of Illinois:

DEAR SIR—We have the honor to submit herewith our report as State Board of Fish Commissioners from Oct. 1, 1906 to Oct. 1, 1908.

The work of the Illinois Fish Commission has advanced wonderfully in the past ten years. From a very modest beginning it has increased its scope and usefulness, until it ranks high among the commissions of the country. In every department it has operated on a much larger scale, and its benefits to the people have correspondingly increased. In its work of conservating the fish of Illinois it is doubtful whether any department of the State is working to a greater benefit of the people, and especially the poorer classes, who depend so largely upon fish as food.

The distribution of fish in 1908 was greater than in any previous year. All applications were filled, the conditions for collection being especially favorable. The stage of water was right during the whole time of collection, and thousands of fish were gathered up and sent to various parts of the State. Nevertheless, millions of fish perished, on account of our inability to take care of them. This enormous waste could have been prevented, if we had not lacked facilities for carrying on the work. An additional appropriation will be asked at the next General Assembly, to meet this exigency.

Two more stations are needed on the Mississippi, between Savanna and Galena. All the rivers in the northern part of the State, as well as the lakes of McHenry and Lake counties, could be supplied from these two stations. No rivers in the world have greater natural advantages for the propagation of fish than the Mississippi and Illinois, and with a little expense their product which is now being destroyed by heat, low water, and other adverse conditions, could be rescued, and used to replenish the depleted lakes and water courses of this State.

No greater problem confronts the American people today, than that of conservating our rapidly decreasing natural food resources. The wild game animals and fishes are being exterminated at a rate which shocks the scientists of the world. In our western rivers, particularly the Columbia and other streams where the salmon was once over abundant, the fish have now become almost extinct. Were it not for the work done by the United States Fish Commissions in replacing the fish taken to supply the canneries, the salmon would have practically disappeared from our western rivers. The same conditions prevail to a lesser degree in Illinois. Were it not for the Fish Commission, the game fishes would

have long since disappeared almost entirely from our rivers and the output of the commercial fishes would have decreased to a small percentage of what it is today. For every dollar expended in saving our fish, the people of the State profit fifty fold.

Within the last year a station has been erected at Havana, for the purpose of artificially propagating pike perch, and kindred species, and the results of this work have been beyond our expectations. It is the first attempt the State has made in hatching fishes, this work having been done heretofore entirely by the United States Bureau of Fisheries. Out of thirty million eggs delivered to us by the Government from Put-in-Bay, Ohio, over sixty per cent were fertilized and hatched. We are in hopes of showing a larger per cent of hatched fish next year, as we will then be better equipped. The pike perch, commonly known as wall eyed pike, Jack-salmon, yellow pike, etc., is considered one of the most palatable fishes inhabiting our waters. It thrives better in larger rivers and lakes. The product from the station at Havana this year was deposited in Kankakee, Rock and Fox rivers and several of the lakes in the northern part of the State.

It is very necessary that a station be erected at Waukegan on Lake Michigan to artificially propagate white fish and trout. An appropriation will be asked the next General Assembly for this purpose. The valuable species of food fishes are decreasing at an alarming rate from our lakes, and immediate steps should be taken to restore them. Waukegan is the most desirable spot on Lake Michigan to carry on this work, as the water conditions here are extremely favorable. The city council of that city has already granted us a site, and will furnish us the water for all operations. It is our intention to have spawn takers go out with each crew during season, take eggs from each ripe fish, fertilize them and return them to the station ready to hatch. At least one hundred million eggs can be hatched out annually.

The condition of Lake Michigan is much better for this line of work than formerly. Prior to the completion of the drainage canal the sewage and other refuse was drained into the lake through the Chicago river, polluting the water to such an extent that white fish and trout left that locality and went northward. When the river changed its course, carrying the pollution down the drainage canal, the lake resumed its natural condition, and the species gradually returned to their old haunts, and are now reasonably abundant in the lower part of Lake Michigan. With a rigid enforcement of the law and the production of young fish at the station mentioned the lake will again abound in this great food supply.

The work at Havana could not have been accomplished, had it not been for the generous assistance of the National Bureau of Fisheries. It furnished us fertilized eggs, ready to hatch from its different stations. This department is doing great work and should be encouraged by the Congressmen of Illinois, as it has distributed in this State alone, within the last year over twenty-five million fish. At this rate, with a like amount planted by the state hatcheries, this food supply, now threatened with total extinction, will be restored, at an expense infinitesimal, compared with the immense benefits achieved. A statement from the com-

mercial fisherman of the State which will be embodied in this report, will show that over forty million pounds of carp and other varities, were shipped to eastern markets from different points on the Illinois river within the last two years, bringing into the State hundreds of thousands of dollars and employing many people.

Another line of work which is receiving considerable attention from the commission is the mussel-shell industry of the Illinois and other rivers of the State. In our streams there are about eighty varieties of clams whose shells are used in the manufacture of pearl buttons, and other pearl articles. Frequently these shells contain valuable pearls, so that the fisherman, sure of a good and profitable market for his shells has the additional chances of great gain through the discovery of these gems. In caring for this industry, which is assuming large proportions, the commission has the task of giving the fishermen all possible leeway in making a living, and at the same time of passing laws for the protection of the mussels in order to prevent their complete extinction. The waters of the Upper Mississippi once abounding in clams are now completely fished out. This must not be repeated in Illinois, if it can be prevented, and the commission is making every effort to deal with the problem in justice to the fisherman of today, and the generations of the future.

Some idea of the amount of the shells taken from our waters can be gathered from the following report of the shipments from six towns along the Illinois river for the year ending October 1, 1908; Havana, 189,000 lbs.; Matanzas, 1,230,370 lbs.; Bath, 1,873,000 lbs.; Browning, 1,387,000 lbs.; Beardstown, 12,415,000 lbs.; Meredosia, 1,933,000 lbs.; a total of 19,027,370 lbs. The price received by the fisherman ranged from $3.50 to $15.00 per ton, an average of about $9.00 per ton, which meant a total of $86,000.00 for the six towns.

As illustrative of the profits which may be made in the business under favorable circumstances the case of a fisherman at Bath may be cited. This man assisted by a boy fished for forty-eight days last summer. He caught shells to the value of $272.00 and took from the mussels, pearls which he sold for $259.00 making a total of $531.00 for the forty-eight days work, or more than $11.00 per day for himself and the boy. In another part of this report the subject of mussels will be treated at some length, as we think the industry is of great importance to the people of the State.

As usual the enforcement of the fish laws has caused the commission more trouble than any other department of the work. Because of the uneasiness of the fisherman regarding the constitutionality of the fish law that was placed on the statute last session of the Legislature regarding the licensing of nets and seines, hundreds refused to take out licenses and a great many purchased them under protest. A test case was tried under Judge Higbee and he decided that the law was unconstitutional. The commission appealed the case to the Supreme Court and during this time all licenses to fish, were paid under protest. The Supreme Court held that only a part of the law was unconstitutional.

Nevertheless, there has been a disposition throughout the State to abide by the law and we find fewer violations away from the Mississippi and Illinois rivers than every before.

A movement is on foot among fishermen of the State, to have the use of the seine discontinued. They realize, as no one else can, the fearful destruction of fish in hot weather caused by the seine, and many of them believe that it should be abolished altogether or its use prohibited for a period of at least two years. Some few fishermen however, are persistent violators and are opposed to any form of law that they imagine infringes on their personal rights. They do not seem to realize, or at least do not care, that if their wasteful methods were allowed to continue unrestricted their efforts to obtain a livelihood from this source would be fruitless. Fortunately these fishermen are becoming less in number each year, although they still cause the commission more or less trouble.

The steamer "Illinois" has been employed in patrolling the river during the closed season, and has been the means of assisting greatly in preventing fishermen from taking fish during the spawning season. It has also been indispensable in the work of collecting young fish from the overflows of the Illinois river and tributary streams. It is equipped with tanks which are provided with aerating apparatus. By this means fresh air is forced through the water, a constant supply provided and the fish can be kept alive for an indefinite period. Such provision is absolutely necessary during the hot weather, because the fish when removed from the sloughs and bayous are already in a rather low state of vitality, and the young fish being naturally delicate, die rapidly upon being removed from the water, unless unusual provisions are made for their safe keeping. The utmost care must be exercised in handling the fish and the crew of the "Illinois" has been very successful in this work.

From the boat the fish are removed to the station at Havana and are there placed in tanks where the water is tempered gradually until the desired condition is reached. An abrupt change in temperature would prove disastrous but the slow change does not effect the fish. They are kept in these receptacles for several days, or until they become sufficiently hardened for shipment. They are then delivered in cans to any point of the State from which an application has been made. A messenger accompanies each shipment of fish to its destination, and with a dipper stirs the water and keeps it properly aerated so the fish will not die. This work has been unusually successful this year, very few fish dying after being put in captivity. The same good results rewarded the messengers in their work of transporting the fish over the State. In every instance the fish arrived at their destination in good condition. This work has put the commission in close touch with the people of the inland towns, and the replenishing of our streams has received the warmest praise from these communities.

The commission has been much encouraged in this work by the intelligence manifested in it by our chief executive, who is thoroughly acquainted with the subject and comprehends the necessity for the protection, preservation and cultivation of this great source of cheap food supply for the people. We believe that if the laws as they exist are well

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INTERIOR OF FISH HATCHERY, HAVANA, ILLINOIS.

enforced and strengthened by a few amendments, future generations in this great commonwealth will reap a harvest of glorious results from the work now in progress.

NAT H. COHEN, *President.*

S. P. BARTLETT, *Secretary.*
HENRY KLEINE, *Commissioner.*

ACKNOWLEDGMENTS.

We desire to acknowledge our gratitude to the various railroad managers for their generosity in making it possible for us to distribute the product of our hatcheries to different points in the State, and for their unfailing courtesy in various other matters concerned with the work. These concessions have enabled us to accomplish a great deal more in the work of distribution than could otherwise have been possible.

We are under especial obligations to the following roads: C. B. & Q. R. R. Co., Wabash R. R., Illinois Central R. R. Co., Chicago, Peoria & St. Louis R. R. Co., Chicago, Rock Island & Pacific R. R. Co., Chicago & Eastern Illinois Ry. Co., Chicago, Elgin & Eastern R. R. Co., Fulton County Narrow Gauge Ry. Co., Mobile & Ohio R. R. Co., Toledo, Peoria & Western R. R. Co., Wabash, Chester & Western Ry. Co., Peoria & Eastern (Big Four) R. R. Co., Iowa Central Ry. Co., Wisconsin Central Ry. Co., Illinois Traction System and Illinois Valley Ry. Co.

The United States Fish Commission has on several occasions assisted us greatly in our work by furnishing us millions of fertilized eggs from different species of fish ready for propagation. For this we are indebted to Hon. Geo. M. Bowers, Commissioner, who also gave us permission to include in this report, many of the most valuable documents published by the Bureau of Fisheries. We are also thankful to C. H. Townsend of the New York Aquarium who contributed to this report, a most instructive paper on pond culture. The information contained in these documents is of great importance to anglers and students of fish culture as well as to the commercial fisherman.

We feel especially grateful to the several express companies for their coöperation with us during the closed season. They have observed the law to the letter, not receiving consignments of fish during that period. The fisherman finding that the common carrier will not receive his output will naturally let them remain in the water that their future reproduction may be assured.

Governor Deneen has manifested a keen and growing interest in our work, has given much personal time to important matters connected with it, and has encouraged our efforts to carry it on successfully. Each time in his message he has given us special mention.

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THE CULTIVATION OF FISHES IN SMALL PONDS.

BY CHARLES H. TOWNSEND.

Aquarium Battery Park, New York City.

In presenting this paper to the Fisheries Society, I do so less in the hope of affording instruction to professional fish culturists like yourself, than of creating some discussion of the subject and profiting thereby myself. For several years I have been experimenting with small natural and artificial ponds on private estates in the vicinity of New York, with a view to ascertaining their possibilities for producing the commoner fishes. Requests for information on the subject of home fish ponds are being made constantly by the public. I have arranged the matter under the general headings of "Natural Ponds" and "Artificial Ponds" and have attempted to present brief and general instructions for their management. The raising of trout is not considered in this connection. Trout require special conditions of water supply and temperature, seldom found on the farm. For the ordinary run of ponds, it is necessary to restrict the list of available fishes to perches, basses and sunfishes to which they are adapted.

Natural Ponds or Lakes.—It is assumed that the position of the natural pond is such that no arrangement can be made for drawing off the water. Its possibilities will, therefore, have to be considered separately. Its fish life, moreover, can never be brought under complete control. If the character and abundance of the fish life in the pond are not known it is desirable that it be ascertained as far as possible by fishing or netting. If the pond is without any fishes it should, of course, be stocked at once, and the selection of fishes made with due regard to its natural conditions. The extreme depth, midsummer temperature, plant life and character of the bottom of the pond should all be ascertained. The summer bottom temperature of deep ponds should be known. It can be taken by lowering the thermometer in a pail and allowing it to remain some time. If pulled up rapidly the temperature will not have time to rise materially. A series of bottom temperatures will serve to indicate the presence of bottom springs.

A wide area of shallow water in a pond not well supplied by springs or rivulets usually means great warmth in summer. If such a pond can be temporarily lowered and deepened in places, its conditions for fish life would be greatly improved as there is a decided difference in temperature between surface and bottom waters. Below six or eight feet the temperature decreases at the rate of about two degrees for each foot of depth. Increased depth would also give fishes an additional chance for life in winter when heavy ice diminishes their supply of air. A small pond supplied chiefly by rainfall, may be increased somewhat in water supply by leading to it ditches from adjacent fields; while its depth may admit of some increase by enbankments. If water can be had by boring an artestian well may make just the difference between a poor pond and a good one. Fish ponds should have water plants to afford shelter for young fishes and har-

bor the various forms of aquatic life on which they feed. Several kinds of common pond weeds will serve for this purpose. The broad leaves of water lillies afford shelter in summer for the large fishes and should be introduced. If the pond be very small and unshaded some floating boards will afford shelter. Too many large fishes in a pond are detrimental since they are consuming the food supply and are themselves going to waste. When such fishes cannot be taken with a hook, as sometimes happens, they should be removed with a seine, if it is possible to do so, and marketed. It is important that the mature fish crop of a pond be utilized and the young of the year be given a chance to develop. The accumulation of large fishes serves no useful purpose, but results in overstocking, exhaustion of the food supply, cannibalism and stunted growth.

If a natural lake or pond is already stocked with carp which are not desired and cannot be entirely removed, their further increase may be checked by the introduction of black bass, which feed freely on young carp. Black bass will also keep other species in check by devouring their young, and thrive amazingly in the process. If the waters contain black bass or other fishes, which have become stunted from overcrowding and the exhaustion of the natural food supply it is important to reduce their number by any methods of fish catching that will prove effective, and to restore the food supply by introducing other species.

If numerous adult yellow perch are added their young will contribute to the food of the bass and other large species. Experiments have shown that the fishes stunted from overcrowding are not necessarily permanent dwarfs, but will attain a large size if well fed or removed to more favorable waters. No fish could be more stunted and worthless than those swarming the lakes of Central Park. Yet we have succeeded in doubling the size of such fishes in two years. Stunted European rudd transferred from Central to Prospect Park began developing and later when we seined them out for exhibition at the aquarium it was found that their size compared favorably with that which they attained in Europe.

All ponds, whether natural or artificial, containing food fishes should be stocked with brook minnows, shiners, chubs, fresh water killifish and other small species, to constitute the food supply. The killifish and other small species, it may be noticed in passing, are useful in small, ornamental ponds in destroying the larvæ of mosquitos.

The full use of the fish crop of the large natural pond or lake can seldom be secured by ordinary fishing. It is necessary that seines and trap nets be used. Experience has proved that such ponds usually contain many large fishes which will not take the hook. The introduction of new adult stock may be desirable in an old pond where there has been in-breeding, but overstocking is the main trouble, the remedies of which are thinning out and reestablishing the food supply.

Owing to the customary preference for game fishes many excellent pond species such as rock bass, calico bass, yellow perch, white perch, long eared and blue gilled sun fish, and cat fish have been overlooked. Other kinds such as the war mouth or the white bas inhabiting waters of the south and middle west are equally desirable. All of these species increase rapidly, take the hook readily and are good fishes. They will multiply in favorable waters with less care than probably any other native fishes. With the exception of the cat fish they will take the artificial fly and afford good sport. They are of considerable commercial importance, since according to Government statistics, the quantity annually sent to market exceeds twenty-eight million pounds. Nearly all of them are known to attain weights exceeding two pounds.

Ponds Made by Damming Streams.—Ponds created in this way should on no account be completed without the placing of drain pipes and pen stocks so that the water can be lowered and the fish life controlled. There are marketable fishes going to waste in ponds everywhere for lack of simple facilities for getting at them. The deepest portion of the pond should be at

the lower end where the fish will gather when the water is drained down. Ditchs dug in the bottom of the pond leading to the deep hole or "kettle," will greatly facilitate the concentration of the fishes at that time.

Two or three ponds will be found to be much more satisfactory than one, since they will permit of the sorting of fishes according to size. Angling or other fish catching will then naturally be confined to the ponds containing the larger fishes. If properly managed a series of fish ponds will naturally yield a surplus for the market. It is dangerous to construct a fish pond in a narrow ravine, as the dam is liable to be broken during the spring freshets or exceptionally heavy rains, and the pond will gradually fill up with silt. Even if the embankment is not broken during high water, it is difficult to screen it so that the fishes will not escape. A safe plan is to make the pond at one side of the stream by excavation and embankments leading the water to it through a ditch and damming the stream sufficiently at the ditch head to divert a portion of its flow. In case of freshets the deep pool formed in the stream by the dam at the ditch head naturally receives the silt brought down the streams, thus guarding against the filling up of the fish pond. The ditch itself should be screened at both ends to prevent the ascent of fishes to the stream and keep floating drift out of the ditch. If the pond can be excavated in marshy ground, so much the better. A layer of clay on the bottom will render it more water tight than it would be otherwise. The embankment should be broad and before it is thrown up all sod should be removed so that there will be no subsequent seepage caused by the decay of vegetable matter. The earth used for the embankment should also be free from sods or other matter liable to decay. The ground cleared for the embankment should have a ditch extending its full length into which the new earth will settle, thus increasing the stability of the dam.

The embankment of the dam if it is to be six fet high should be ten or twelve feet wide at the base and four feet broad on top. The earth used in its construction will naturally be derived from the bottom of the proposed pond, which will, of course, serve to increase its depth. The overflow should be large enough to carry the surplus, when the water is high, without danger to the dam and the outlets in general should be screened with wire netting to prevent the escape of fishes. The drain for drawing off the water shuld, of course, be put in place before the dam is thrown up. Earthen drain pipes are risky, as no matter how closely the joints may be set and cemented, plant roots will eventually find their way inside and clog them up. Iron pipe of not less than four inches diameter with the joints well soldered is more reliable. A hollow log will serve the purpose of a drain pipe, and wear well. If the drain, or bottom outlet, is built of concrete and large enough to be conveniently cleared, it would be more effective in lowering a large area of water. The upper end of the drain should fit tightly into the foot of the upright penstock in the pond. The penstock itself is merely an upright drain or sluice of planks or concrete, having about the same capacity as the drain pipe itself. It is fitted on one side with short "water boards" sliding in grooves which can be removed one after another, to permit the escape of the water. A heavy plank should connect the head of the penstock with the top of the dam.

Before the new pond is filled, all roots, stumps, rocks and everything else that would prevent the free sweep of a net along the bottom should be removed. All ponds, whether natural or artificial, accumulate debris of which they can not be cleared, except when empty. A muddy pond will give the fish a muddy flavor. When a pond is being cleaned it is necessary to remove the fishes from the deep hole or kettle. Any attempt to remove decayed matter and sediment while fishes still occupy the deeper portions of a pond may be fatal to them, as dangerous gases are then liberated among the crowded fishes. If the pond is very foul, it should be only partially lowered at first and the fishes removed with a seine. With a reserve pond or two it is possible not only to thoroughly clean a pond but to "winter" it;

that is, leave the bottom exposed for a time to the action of the sun and frost. This destroys excessive plant growth and kills out destructive water beetles and ther enemies of young fishes and is approved by most professional fish culturists. With a series of ponds constructed at different levels, the overflow of the upper ponds will serve to feed those below. The more fall there is to the water the better will be its aeration—a matter of great importance to small ponds. It is desirable that surface water caused by rainstorms be kept out of small ponds by banking up or ditching.

The following instances, among many which came under the writer's personal observation, will serve to show some of the difficulties in the way of successful management, where ponds are constructed without provision having been made for drawing down or seining.

A certain deep lake of about two acres in Connecticult, formed at great expense by damming a brook, is without any provision for drawing down. The conditions prevailing in it are unknown, and nothing but hook and line or some form of trap net are available for ascertaining its contents, since its borders will not permit the use of a drag net. In the meantime, snapping turtles kill the young ducks on it each summer, and there is no way of getting rid of them.

Another pond, which could not be lowered, was believed to be without fishes, until the use of a seine in one corner showed that the yellow perch fry introduced two years before had already attained good size. The presence of snags elsewhere in this lake prevented the use of the net. The management of this pond will always be difficult and unsatisfactory.

A lake in Zoölogical Park stocked with yellow perch fry in 1903, was represented to be without fishes, until the use of a seine sent from a Aquarium a year later, showed it to be well supplied. The full utilization of this lake is, however, impossible since its bottom has many scattered rocks which prevent effective seining. If the rocks had been removed originally, a good sized seine would sweep it from end to end.

Water Supply.—The water supply of the fish pond is the most important thing to be considered. It must in fact be taken into consideration before the artificial pond is made. The flow of water should be abundant. About twice as much will usually be required as the beginner thinks is necessary. Ponds fed by strong springs are excellent and are not subject to the dangers of which stream-fed ponds are exposed. Their temperature is naturally more equable throughout the year and they are less liable to heavy freezing in winter. In warm weather and in the winter time, pond fishes avoid extreme tempeature by frequenting the vicinity of bottom springs. Spring water, however, contains less life available as fish food, and less air than that from brooks. Its value for pond supply will be improved, if it can be led some distance as a rivulet. Fish-life in small ponds with limited water supply will suffer from heavy ice in winter. The ice should be broken daily, and masses of brush and branches placed partly in the water will aid in keeping air holes open, especially if they are moved by the wind.

Extent and Depth of Ponds.—The extent and depth of ponds made by damming streams, will be governed somewhat by the nature of the situation available. A pond of an acre or more in extent, and with eight or ten feet of water in the deepest part, will, if properly managed, give excellent results. It may be necessary to make it less than one-quarter of an acre in extent, but a small pond should have an extreme depth of not less than six feet, although it is quite possible with a strong water supply to raise fishes in very small and shallow ponds. This, however, means active cultivation, with daily feeding of the fishes, numerous ponds to permit of sorting and all the details of a fish cultural establishment. As a matter of fact, nearly all of the extensive fish-breeding carried on by the national and State fish commissions have been done in ponds of rectangular shape, averaging perhaps less than 100 feet in length and 25 feet in width, having depths of only three or four feet. Such ponds are worked in series, as nursery and rearing ponds, and there are generally two or more ponds of larger size in which fishes of

different growths can be held. Ponds to be used for black bass and in fact, most other fishes, ought to be several acres in extent and quite deep. In general, fishes kept in small ponds do not attain the size of those in large ponds since their range and food supply are restricted.

Feeding.—If large numbers of young black bass or calico bass are removed to safety to smaller ponds where they may exhaust the natural food supply, it will be necessary to feed them. If they are put in small "nursery ponds," where they are crowded, feeding is imperative. The principal natural food of fish is fish, which should be perfectly fresh. For young fishes it must be cut and boned, then rubbed through a fine wire screen. Adult fish kept in restricted quarters will also require feeding. They may be fed largely on live minnows. Among the fish foods used at the New York acquarium, are live minnows, live shrimp, chopped fish, beef, liver and clams. It is a mistake to suppose that fishes do not require an abundance of food. They may live without it but cannot grow.

Water Plants.—About one quarter of the ordinary pond should be as shallow as 10 or 12 inches and planted with pond weeds, such as potamogeton, parrots-feather (myriophyllum), water-celery (vallisneria), hornwort (ceratophyllum) and cabomba. Suitable plants for the purpose may be found in most streams and ponds, and there are many others than those mentioned. Water plants that are satisfactory in some regions may, however, not be so in others farther north or south. Water plants are necessary as shelter for young fishes, and greatly increase the various forms of small aquatic life necessary for their food. They also serve to aerate the water, which is most important in small and sluggish ponds. They may be planted by tying to stones and dropping them from a boat, or set in the ground after the water has been partially lowered The slightly greater depths, from one to three feet, may be planted with water-lillies, while the more extensive and deeper portions should be kept clear of vegetation. If the vegetation becomes too thick it can usually be pulled out with a rake, but it is sometimes necessary to cut it with the scythe. Willow and other trees should be planted at some points to furnish shade. Aquatic insects, crustaceans and mollusks, bred among pond weeds, constitute no small feature of the ponds food supply. It is recorded in the "American Fish Culturist," that an electric light over a certain pond was found to attract inserts which fell in the water in such numbers as to supply an important quantity of fish food. If the pond weeds, together with the brook minnows, frogs, crustaceans and other small fry which are to establish the natural supply of food, can be introduced a year before the stock fish are put in, the conditions for success will be greatly improved.

Spawning Places.—Fish-ponds should be supplied with spawning conditions suitable to the fishes occupying them. Small-mouthed black bass, which make their nests in gravel, will require gravelly bottom. Large-mouthed black bass, which nest among the roots of plants, will find the conditions they require among the weeds of the pond. Yellow perch, which spawn among twigs under water, are easily accommodated—pieces of brush may be set firmly in the bottom where the water is shallow, in the branches of which they will deposit large whitish masses of spawn. If the brush tops extend several inches above the surface of the water, so they will be swayed by the wind, and kept free of sediment, the hatching of masses of spawn will be greatly facilitated. Rock bass and the various species of sun fish which, like the small-mouthed black bass, make their nests in gravelly places, will absolutely require places of that character if they are expected to increase and a few carloads of gravel dumped around the lake in water about two feet in depth will furnish the necessary conditions.

Since ponds, to be successful, must have proper spawning conditions, some study of the habits of pond fishes is important, and there are numerous helpful books available. It is now the custom with professional fish-culturists to supply artificial spawning nests in ponds containing small-mouthed black bass. These are small shallow boxes about two feet square filled with

mixed gravel and sand, which early in the spring are placed everywhere in shallow water around the pond. They are at once appropriated by pairs of basses seeking spawning places. The boxes have boards nailed on two sides at adjoining corners, which extend about a foot higher, affording shelter for the basses similar to that which they naturally seek under the shelter of submerged logs. Basses guard their nests for several days after the spawn has been deposited, and it is the custom at fish cultural establishments to place over the nest before the young fishes leave it, a light circular frame or iron covered with cheese cloth, one end of which protrudes above the water. This prevents the young fishes from wandering away from the nest, and makes it possible for them to be removed from the dip net to nursery ponds, where they are safe from their enemies and the cannibalistic tendencies of their parents.

One of the numerous private ponds visited by the writer, a pond half a mile in length, was examined with great care and found to be totally lacking in gravel areas. Although it had been stocked several times with small-mouthed black bass, there had been apparently no natural increase. With a mud bottom it afforded no spawning surface whatever for this species. The writer recommended the introduction of numerous artificial spawning nests, or the introduction of the large mouthed bass which would not require gravel beds but could spawn among the abundant water plants. It is probably unnecessary to add that there should be no fishing allowed during the spawning season, which with most of the fishes mentioned is the spring months.

Number of Fishes Required.—In stocking waters it is not necessary to have a large number of adult fishes. For a pond of about an acre in extent, twenty pairs of black bass will be sufficient, and perhaps fifty pairs of any of the other kinds of fishes mentioned. These numbers will in fact suffice for still larger ponds and should be reduced for smaller ponds. When the conditions are right the progeny of the first year will usually stock the pond to the limit of its natural food supply. It should be borne in mind that heavy stocking serves no useful purpose, unless it is the intention to catch some of the adults the first year. It is just as well to stock with two or three kinds of fishes and time will show which species are the best adapted in that particular body of water. With black bass the yellow perch may be placed with safety, not only on account of the food it supplies to the former, but also on account of its own value as a food fish. It is remarkably prolific, and with a good start can usually take care of itself. The same may be said of the catfish. It is harmless since the basses and sunfishes are active in guarding their own nests. The yellow perch and the catfish may also be introduced into ponds containing rock bass or calico bass. There is no reason why black bass, rock bass, and calico bass should not be kept together if the pond is of considerable size.

THE FISHERIES OF ILLINOIS.

The distinction of Illinois as a fish-producing state is to be found in its relation to the Mississippi river and some of the most important branches of that stream. Bordered by the main river for the whole length of its longest side, by the second largest tributary of the Mississippi for 130 miles of its southeastern boundary, and by the Wabash for 198 miles on the east, the state is also traversed diagonally by the Illinois river, admirably adapted, by its sluggish current, by the many bottom-land lakes connected with it at low water, by the extensive breeding-grounds afforded to fishes during the period of the spring over-flow, and by the vast abundance of fish food in its waters at all seasons of the year, to support an unusually large and varied fish population. Illinois is consequently far in the lead of all the states of the Mississippi Valley in respect to river-fishery products. It markets a larger value per annum in fishes taken from flowing streams than all the states immediately surrounding it taken together. The total for this state in 1899 was $517,420, and that for Iowa, Missouri, Kentucky, Indiana and Wisconsin combined was $435,137. Illinois furnishes, indeed, more than one-third of the fishes sent to market from all the streams of the Mississippi Valley—valued in 1899 at $1,473,040. Furthermore, the Illinois river and its tributaries produced in 1899, 72 per cent of all the fishes taken from the streams of the state, and a fourth of the entire fish product of the Mississippi Valley came in that year from this one stream. The totals for the different Illinois stream systems were as follows: Illinois, $371,110; Mississippi, $118,278; Wabash, $38,065; Ohio, $20,029; Kaskaskia, $3,002; Big Muddy, $1,136.

The Great Lake fisheries in Illinois waters are of insignificant proportions. The total longshore product for Cook and Lake counties during the last census year was $12,500—about $2,000 less than the sum derived from our river turtles alone.

The river fisheries of the state gave employment in 1899 to 2,389 men, and utilized a capital of $225,000. Sixteen steamboats, 200 house-boats and 1,500 row-boats were used in these fisheries, together with about 45 miles of seines, 10 miles of trammel-nets, half a mile of gill-nets, and 14,000 fyke-nets, pound-nets and traps. The seines and fyke-nets together yielded about 80 per cent of the product, the seines bringing in $251,562 and the fyke-nets $210,054. Set lines yielded $37,191; trammel-nets, $24,185; traps, $2,707; gill-nets, $1,290; drift-lines, $1,141; pound-nets, $811; and hand-lines, $701.

The dozen most productive kinds of Illinois fishes, according to the statistics of the last census year, were as follows: European carp, $244,322; buffalo, $111,707; catfishes and bullheads, $68,535; sheepshead or drum, $17,729; crappie, $14,419; sunfish, $12,067; black bass, $10,842; suckers and red-horse, $7,845; paddle-fish, $6,210; white, yellow, and rock bass, $5,601; lake and shovel-nosed sturgeon, $3.904; wall-eyed pike, $1,174.

About three dozen of our 150 species of Illinois fishes have a marketable value as food, and a dozen or more may be classed as edible, although not popular enough or abundant enough within our limits to have any commercial value as Illinois products. A dozen of the most useful species are of

RED-MOUTH BUFFALO.
Ictiobus cyprinella (Cuvier & Valenciennes.)

MONGREL BUFFALO,
Ictiobus urus (Agassiz.)

First Class.	Second Class.	Third Class.	Fourth Class.
Whitefish	Golden shad (rare)	Paddle fish	Dogfish
Great Lake trout	Northern mooneye (rare)	Lake sturgeon	Gizzard-shad
Bluecat	Lake herring	Shovel-nosed sturgeon	River carp
Channel-cat	Eel	White-nosed sucker	Lake carp
Mud-cat	Missouri sucker	Common red-horse	Spotted sucker
Common pike	Red-mouth buffalo	Short-headed red-horse	Common sucker
White crappie	Mongrel buffalo	Yellow bullhead	Burbot
Black crappie	Small-mouth buffalo	Common bullhead	
Bluegill	European carp	Black bullhead	
Small-mouthed black bass	Eel-cat (*anguilla*) (rare)	Little pickerel	
Large-mouthed black bass	Lake catfish (rare)	Warmouth	
Wall-eyed pike	Rock bass	Sheepshead	
	Blue-spotted sunfish		
	Long-eared sunfish		
	Pumpkinseed		
	Sand-pike		
	Yellow perch		
	White bass		
	Yellow bass		

really good quality, and half of these are among the best of the fresh water fishes. In the following list the edible species are distinguished in classes of graduated importance, according to our judgment of the estimation in which these fishes are generally held. A few species are put in a lower class than their quality would call for because of their infrequent occurrence in our fisheries.

Although the fisheries of the state are not, it must be admitted, commercially of the first importance, they are of sufficient economic interest to make it the duty of all concerned to preserve them carefully and to take all practicable measures for their improvement and development. Making due allowance for fishes sold in local markets, distributed by peddlers, eaten by those who take them, and not represented, consequently, in published statistics of the trade, it may be fairly said that our Illinois fisheries now yield at the rate of a pound a day, throughout the year, of cheap and desirable food to about 80,000 persons—virtually equivalent to one meal of fish a day for a quarter of a million people. It is encouraging to conclude, from a comparison of available statistics, that we have no reason to believe that the general fishery product of our rivers is now declining, either in value or amount. On the contrary, according to reports of the State Fishermen's Association published from 1897 to 1901, the total value of the Illinois river product increased by 60 per cent during that interval, being $207,685 for 1897, and $351,753 for 1901. The yield of carp increased in value 69 per cent during this period; that of buffalo, 88 per cent; of black bass, 32 per cent; of catfish and bullpouts, 41 per cent; of crappie, 47 per cent; of sunfish and yellow perch, 154 per cent; and that of striped bass, 27 per cent,—the only important species then reported as diminishing being the sheepshead or fresh-water drum, commonly marketed as white perch, the yield of which declined 27½ per cent.*

COMPARATIVE STATISTICS, FISHERIES ILLINOIS RIVER, 1897 AND 1901.

(Computed from Reports of the Illinois Fishermen's Association.)

	1897	1901
Carp	99,059	167,266
Buffalo	48,139	90,357
Black bass	3,434	4,532
Drum	20,452	14,838
Catfish and bullpouts	26,283	36,933
Spoonbill	.....	232
Sunfish and perch	3,080	7,830
Striped bass	3,234	4,117
Crappie	4,004	5,880
Dogfish	.....	10,460
	207,685	342,445

* Unpublished data of shipments from Illinois River points, recently furnished me through the courtesy of Mr. N. H. Cohen, President of the Illinois State Fish Commission, enable me to compare the total product of this river for 1906 and 1907 with that for 1909 as contained in the Report of the United States Commissioner of Fish and Fisheries for the year ending 1901. Against a total product of the Illinois River of approximately 14½ million pounds in 1899 we have, for 1906, 16,149,076 pounds, and, for 1907, 13,218,137 pounds, or an average for the two latter years of 14,683,606 pounds.—S. A. F.

A large part of the increased yield is doubtless due, however, to a mere enlargement of fishing operations, illustrated by the data for 1894 and 1899 which show that the number of men employed increased in this interval by 44 per cent and the capital invested by 44½ per cent. This favorable condition of our fisheries is doubtless due in part to natural conditions, and evidently also in great measure to state legislation effectively controlling the times and methods of capture, and providing for the recovery and restoration, to streams suitable for their maintenance, of fishes left stranded on the river bottoms by the retreat of the waters of the overflow.

It will be seen from the foregoing that the Illinois river, with its tributary lakes and streams, is by far the most important fishing ground within the boundaries of Illinois, that this stream and its dependencies are gifts of nature to the State, valuable in many ways, which we should fully appreciate and utilize to the best advantage, allowing no single interest to destroy or overshadow any other. Measures for its utilization as a sewage outlet for great cities and as a commercial highway between the Mississippi and the Great Lakes, and for the reclamation of its enormously fertile bottom lands, should not be taken without due regard to its importance and promise as a perpetual source of cheap and healthful food to the people of the state and country.

CARP IN AMERICAN WATERS.

By Leon J. Cope, of U. S. Bureau of Fisheries.

As regards the culture of carp in this country, we find that, although there was for a few years an enormous demand for the young fish—hundreds of thousands of which were yearly distributed free by the United States Fish Commission and by many of the state commissions—their culture was soon abandoned in nearly all cases and the fish allowed to escape into the open waters of the vicinity. There are a number of reasons to account for this. People were expecting too much. They rushed into carp culture in entire ignorance of the conditions requisite for its successful operation, and, such being the case, it is no wonder that they were disappointed in the results and that their attempts were failures. In the second place there was also a general disappointment in the qualities of the carp as a table fish. Undoubtedly, as in the case of its culture, too much had been expected, though perhaps not without some justification. Still, the bulletins that had been published and distributed made frequent mention of the muddy flavor of the carp when grown under unfavorable conditions, and emphasized the necessity of keeping such fish for a time in clear water before killing them. Then, too, the fish were often eaten at the wrong season, during the spring and summer months, when their flesh is admittedly poorer in quality than in the fall and winter. This is true of most fish that live in rather shallow and sluggish waters, and even black bass are seldom caught and eaten at these seasons. Perhaps even more important was the matter of cooking. It is generally conceded that carp should be cooked in special ways, and the Germans especially have many elaborate dishes which they prepare from its flesh. Most of those who tried the fish here cooked it as they were accustomed to cook our native fishes and decided that it did not compare favorably with these, though, according to the statistics published by Smiley (1886), many appeared to be very enthusiastic about it. Finally another, important factor which probably led to the abandonment of pond culture in many cases was the increasing abundance of carp in the rivers and other open waters. It was found that what fish were wanted could be obtained with less trouble from the open waters than they could be raised.

Although the carp did not fulfill the expectations in the matter of pond culture, it has more than done so in the way it has adapted itself to the conditions found in this country and the rapidity with which it has multiplied in our waters; and we find that, instead of being generally used throughout the country and especially in those sections where it was thought it would be most appreciated on account of the poverty of the streams or the poor quality of their inhabitants, it is being sold almost entirely to the poorer classes of people in our large cities. The Illinois river, together with the other rivers of the Mississippi drainage system, is one of those localities in which it was thought that carp would be a most valuable accession, and such has turned out to be the case, though not in the exact way originally expected. Although practically not used at all for home consumption, it has nevertheless added very appreciably to the resources of the region.

With our constant immigration of foreigners and the formation and growth in our large cities of great foreign settlements, the problem of supplying these multitudes with cheap yet wholesome food becomes very great, and anything which helps to meet this demand is of great value to the country. From this point of view there is no doubt of the value of the carp and the benefits to be derived from its introduction. To pervert a common saying, in those places to which it is suited it has made two fish to grow where but one grew before.

But now come the sportsman and the commercial fisherman, who maintain that, while all that has been stated may be true, the presence of the carp is entirely supplanting the fish which was there before, and that one fish was of more value than the two carp which have taken its place. This is especially true of such waters as the Great Lakes, and others that were well supplied with good native fish. Furthermore, the sportsmen and others claim that in various ways the carp does more than enough damage to offset its value in other respects. By these persons it is made responsible especially for the great decrease of water-fowl in recent years.

In most cases the reported damage has been either greatly exaggerated or is entirely unfounded. Thus it was found that carp probably have little or no share in causing the decrease of the native fishes commonly taken for sport or for food; and that in the case of the black bass, at least, there is evidence indicating just the opposite—that the bass have actually increased instead in numbers in some places from having the young carp to feed upon. In the matter of uprooting vegetation, making the water continually roily, and injuring possibly even completely destroying in some cases—the regular feeding ground of the migrating ducks—in these cases the evidence goes very largely against the carp, though its effects have undoubtedly, in many instances, been greatly exaggerated, and more has been charged against the fish than it rightfully deserves. In certain places, such as reservoirs and lakes supplying water to cities, etc., there is no doubt that the carp is an unmitigated nuisance, and that its presence is undesirable. Nor can it be considered suitable for the cold, clear lakes of the north, such as are found in northern Wisconsin and in Canada; and fortunately the conditions in these are so unfavorable that it will probably never become so abundant in them as to cause much damage by destroying vegetation and roiling the waters.

Against these charges as to its detrimental influence must be set the things in its favor. Chief among these is that already mentioned—the value of carp as a source of revenue to the fisherman of Illinois in the regions where it occurs, and as a cheap food for the poorer class of people who can not afford a better fish. It is impossible to express in dollars and cents the beneficial results and the damage done and thus compare them directly. It seems quite safe to say however, that if the question were considered from the monetary standpoint alone, the benefits would far surpass the damage. Two other claims on the carps' behalf, which may prove to be of considerable importance, ought also to be mentioned. These are the destruction of the fluke-worm *(Fasciola hepatica)*, and of the larvæ of noxious insects, especially mosquitoes. It is possible, also, that in rivers, below cities, it may do important service as a scavenger, destroying the germs of certain human diseases, as it does the larvæ and encyste stages of the liver fluke.

And when we have decided whether the carp does more harm than good, we still have the real question before us. The essential problem is this: The carp is here, and here to stay; what are we going to do with it? How can we make the most of its good qualities and prevent it from doing damage? Even were such a course desirable, the extermination of the carp in our waters is out of the question. Mr. Townsend, in some remarks before the American Fisheries Society (Transactions of Thirtieth Annual Meeting, 1901, p. 123) stated the case well when he said:

> We hear a great deal from sportsmen's clubs and from others sources as to how the carp can be exterminated. It can not be exterminated. It is like the English sparrow, it is here to stay. At a meeting of the American Ornithologists' Union a while ago, one of the foremost ornithologists stated that the English sparrow could

not be exterminated in this country. I think it is the same way with the carp. It is here to stay. We can not exterminate it any more than we can exterminate the green grass of the fields. I do not wish to pose as an advocate of the carp—I prefer other fish myself—but I maintain that the carp has a place in good and regular standing in our big eastern markets, and I do not think that our great republic with its rapidly increasing population, can afford to sneer at even so cheap a source of food.

In the course of my investigations and inquiries I met frequent propositions that the government, or the respective state governments, should offer a bounty on carp. Nothing could be more futile than this, as has been abundantly illustrated in the case of the English sparrow. The best bounty that can be offered is an increased market—a growing demand that will make fishing for carp a profitable business.

Nothing whatever has been said in the present report about protection for the carp in open waters, since, whatever may be the opinion as to the fish's desirability, protection for it does not seem to be needed. I am of the opinion, however, that the phenomenal increase of the carp in those waters where it has been longest will soon reach its maximum, if it has not already done so, and that as the various factors become adjusted a more stable balance will be reached. It is conceivable that persistent fishing may greatly reduce its numbers.

And now, should I attempt to sum up the principal results of the investigation in a single paragraph, I should say that, whereas the carp undoubtedly does considerable damage, from the evidence at hand it seems reasonable to conclude that this is fully offset by its value as a food fish and in this way that it can not be exterminated, and that the problem is how to use it to the best advantage. Efforts should be directed to encourage utilization of the fish in all ways possible since it appears to be a resource as yet comparatively undeveloped.

FRESH WATER CLAMS.

The naiades, or pearly fresh-water mussels, have a distribution throughout the lakes and waters of the globe, not only on the continents, but also on all the larger and some of the smaller islands. They exist in countless numbers, especially in the United States, which seems to be the metropolis of these forms, both as to species and individuals. Probably over 600 valid species are now living in North America, and fully three-fourths of these are found in the Mississippi drainage area and the streams which fall into the Gulf of Mexico from the north. Many of these mussels here attain great size. Some are covered with knobs or postules, or have peculiar and striking forms, while others are brilliant with radiating stripes or beautiful and intricate patterns or coloring. The interiors of many of these species are very rich, the colors varying from almost blackish-purple to coppery, glowing red, pink, straw-color and silvery white.

Within the past few years a great deal of interest has been aroused in the United States in regard to these mussels. Thousands of persons have given more or less attention to hunting them for their pearls, which often have a high money value, and others have gone quite extensively into the business of manufacturing the shells into buttons and various ornaments. So great has been the drain on them that in many places they have become very scarce and are even threatened with extinction.

The number of young contained in the female of the naiades at a single time is often very great. Many of them probably contain from 500 to 1,000 at a time, if fully adult. In other species inhabiting the waters of Lake Nicaragua, Central America, the female sometimes carries no less than 6,000,000 young.

There is ample need for all these young, for from the time of their birth until they die of old age, they are constantly beset by enemies and forces that cause their destruction. Even nature herself seems bent on destroying them. During a severe winter, thousands are destroyed by the cold. In summer other millions are killed by the drying up of streams, the pollution of the water supply and other causes.

Hogs are a great enemy to the naiades, and they not only destroy such as are found on the surface, but root them out from almost any depth. The dumping of manufactories and the sewage of cities turned into rivers are destroying not only the fish but the naiades.

The immense number of mussels taken by pearl-hunters and the manufacturers of buttons and ornaments, generally in the most wanton way, is undoubtedly diminishing the supply with great rapidity. In cases where individuals are collecting independently, either for pearls or to sell to manufacturers, it would probably be very difficult to get them to even throw the small mussels back into the water. But manufacturers who ought to be wise enough to understand how rapidly the supply is being exhausted and how much it is to their interest to preserve it, might at least use their influence to have those in their employ attend to this matter. No mussel less than four or five years old should be taken by a pearl-hunter, or any-

one engaged in collecting for a manufacturer. Such young specimens would not furnish pearls of any value, and, as a rule, they are too small to be used with profit for buttons.

Certain regulations might be made in regard to dredging, raking up, and otherwise disturbing the beds of mussels. J. F. Boeffle, president of the principal button factory at Muscatine, Iowa, who has given the subject much attention, believes that the disturbing of the beds at the time when the animals are loaded down with young is a cause of much injury and he is no doubt right. When the gills are filled with embryos they often protrude when the shell is open, and if disturbed they suddenly close the shell, sometimes cutting off large portions of the ovisacs.

Something, no doubt, might be done in the way of mussel farming, just as oyster-growing is made profitable. The great mussel shoals on the Tennessee river, reaching from Florence Ala., for 20 miles up stream, are literally blocked with mussel shells. Such places, if kept under control and properly worked ought to prove immensely profitable, and they never need be exhausted or even reduced.

In his report for 1908, the United States Commissioner of Fisheries says: An important biological investigation during the past year has been addressed to the distribution and habits of pearly mussels in the Mississippi Valley and to experiments in mussel culture. The pearl-button industry has $2,000,000 capital invested and produces an annual output of $6,000,000, but the supply of fresh-water mussels which constitutes its raw material is becoming rapidly exhausted, and the industry will cease to exist unless relief is afforded. The Bureau is endeavoring to locate all possible sources of supply and to determine the extent of the depletion that has occurred, is making studies of the habits of the mussel in order to recommend necessary regulation of the fishery, and is experimenting in artificial propogation. The culture experiments have been successful almost from the start and work is even now being conducted on a scale promising practical results. A great deal of this work can be conducted with little additional expense in connection with the rescue of fish from overflowed lands, which already constitutes an important work of the Bureau in the Mississippi Valley.

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LOADING THE LIVE-BOX

WHITEFISH AND TROUT IN LAKE MICHIGAN.

By Capt. R. Smith.

Waukegan, Ill., Nov. 11, 1908.

Reproduction in the natural way is not sufficient to keep up the supply of fish in our great fresh water lakes.

Why have our fish decreased at such an alarming rate within the last fifty years? Fishermen are asked this question every day. The answer invariably is, "Caught away," but why are they being caught away at such an alarming rate? Anyone familiar with the fishing industries will say, "Too many small fish have been and are still being caught." Still, the decrease would not have been so noticeably fast had only a reasonable amount of their eggs hatched and the fish thereof grown to maturity. Michigan, Wisconsin, and Illinois have had a closed season on white fish and trout for a number of years, still there was the same decrease in these fish.

The government and states have been artificially hatching and planting these fish, for more than twenty years, but for a number of years the planting was done in a very careless manner, regardless of their natural spawning grounds, or these fish were dumped from high boats, where the shock killed the most of them. They were also planted in waters that were teeming with herring and perch, which made good food for these and none of them could escape. Then more care was given to the planting, men studied their nature, found rocky reefs where instinct told the fish to deposit their eggs, and where there are protection and food for the young, and we can reasonably say, the increase of white fish we have had in the last few years is the result of these plantings.

Scientists, fish culturists, and some fishermen have come to the conclusion that the reproduction of the white fish in the natural way is so limited that it overcomes but little more than the natural mortality. One of our greatest fish culturists, who studied the nature, the habits and reproducting powers of these fish for over twenty years, counted the eggs and found that the average sized female had about twenty-eight thousand eggs, the largest number found. A fish weighing thirteen pounds had one hundred thirty thousand (130,000) eggs. We would naturally figure on about one-tenth of these eggs hatching, and one-fourth of the fish thereof growing to maturity. If this should have

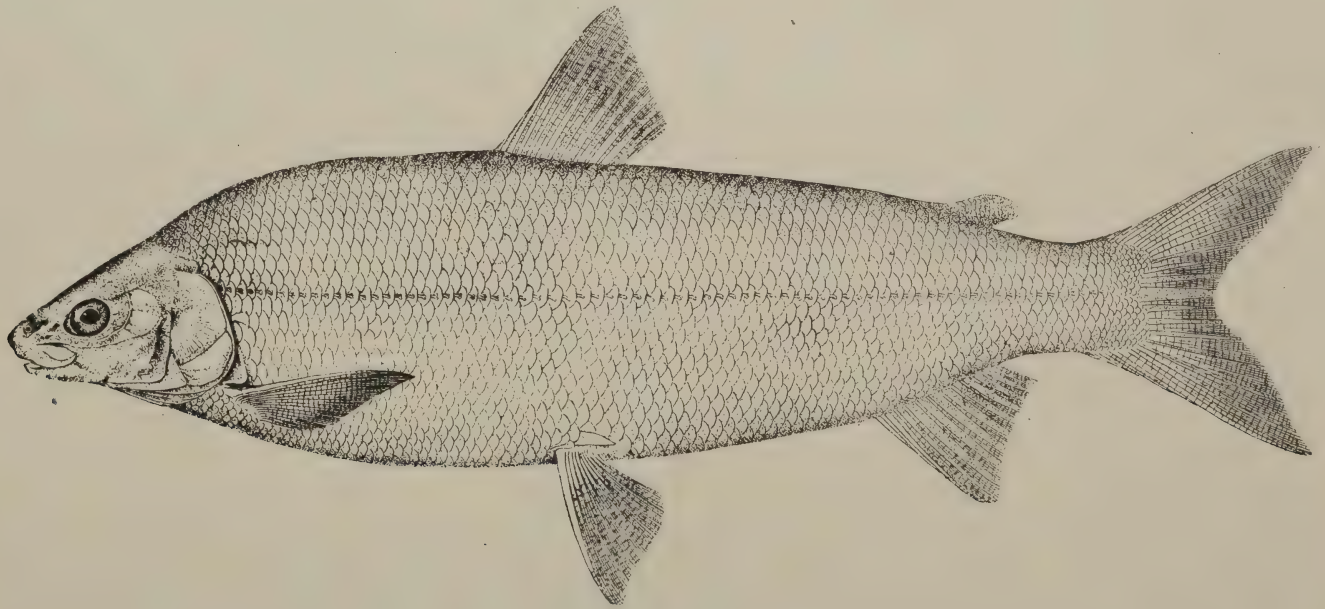
been so, man never could have depleted these waters of fish as they now are. This same culturist found a reef that could be inclosed with netting and placed therein twelve white fish of each sex, where they could spawn in the natural way. The females weighed three and one-half pounds, and had an average of 36,000 eggs each. The percentage of eggs hatched was so surprisingly small that we do not wonder these waters have been depleted of white fish. Out of this enormous number of eggs one hundred thirty-five young fish came to life.

Then, the white fish is a defenseless fish, has no way of protecting itself, and we can safely figure that at least three-fourths are destroyed by trout, perch and herring before they grow to maturity. Had these fish been as productive as some species, as for instance, the German carp, the lakes would have been so over-crowded that there would not have been food enough for them. The Almighty in His wise forethought had provided for this emergency, in letting such a small amount of eggs fertilize. Also His words are true, "Where thou sowest not, thou canst not reap."

White fish are our most valuable food fish, and the most easily caught. At certain times of the year they find their food in shoal water, along the shores and banks, where tons upon tons were dragged ashore with seines. This was also the harvest for the pound net fishermen. Boat load after boat load was taken, the large ones sorted and sent to the markets, the small ones thrown back into the water after having died, or buried on the shores. There was no law prohibiting the catching, or wasting and millions of young fish were destroyed in this way.

Gill net fishing has undergone a complete change. From small sailing smacks, and eighteen to twenty-four nets, we have developed to the use of steam tugs, and could run from ninety-six to one hundred fifty nets. Fishermen had made their meshes smaller, from five to three and three-fourths inches, which caught fish of one pound in weight, and before the species had a chance to spawn even once in its life time. Fishermen could run farther and fish later in the season with the tugs. They planted nets by the thousands on reefs where the fish had crowded to spawn, and completely caught them away. The demand had increased with the growing population, fishermen concentrated all their energy on the catching of these fish, and with the small percentage of reproduction it is easy to figure why they have decreased so alarmingly fast. It was simply harvesting where there was no sowing or planting, and white fish had become almost extinct in the south half of Lake Michigan.

Between 1880 and 1890 many fishermen failed, some moved further north, where white fish were still plentiful, and others started in catching our next most valuable food fish, the trout. This fish is more wary and never will be caught away as fast or as completely as the white fish. There are two distinct species, the Mackinaw or reef, and the deep water trout. The Mackinaw is a shoal water fish, and has its feeding grounds in from six to thirty fathoms of water. Twenty-five years ago they were very numerous in the north half of Lake Michigan, where their main breeding grounds are, but have been decreasing gradually from year to year.



THE WHITEFISH.

Coregonus clupeiformis (Mitch.), Milner. (p. 507.)

They grow to a large size, have large heads, which are cut off when the fish are sent to the markets, and the fish are sold for headless, or steak trout. They spawn on honey-comb rock in from six to twenty-five fathoms of water, feed on all other fish, and have a decided preference for white fish.

The deep water trout is mostly found in the south half of Lake Michigan, in from twenty-five to sixty fathoms of water, and is smaller than the Mackinaw trout. Its average weight is about three pounds. Years ago when the waters were crowded with white fish, some of these fellows would feed on these fish solely, and from the rich food grow to enormous size. It was nothing uncommon for the fishermen to bring in with their catches trout weighing forty and even sixty pounds each.

For at least six months each year very few trout are caught. They rise from the bottom, feed and roam all over the lake. Like its brother, the Mackinaw, the deep water trout is very voracious and will snap at any thing that swims or moves, even swallowing bones thrown overboard from steam boats and vessels, which are indigestible, and are found in them after being caught. Trout is considered one of our finest food fish, stands shipping well and millions of pounds are distributed over our western states, and as far east as the city of New York. Both the Mackinaw and deep water trout spawn from about the 20th of October until along the forepart of December, but instead of depositing their eggs on honey comb rocks like the Mackinaw go far out in the lake in deep water, from forty-five to sixty fathoms, and deposit their eggs on clay bottom. Rough weather and storms never drive these fish from their spawning grounds and undoubtedly a large percentage of eggs fertilize.

The females have about eight thousand eggs each and the way they have been taken out of the lake in the last twenty-five years we can safely figure that at least one-tenth of the eggs fertilize, and come to life. Whereas the white fish spawn in the most stormy period of the season on boulder rock, commonly called round-heads, and in very shoal water, in from two to ten fathoms. They gather around the edges of these reefs on sandy bottom from about the tenth of October on, and from about the fifteenth to the twenty-fifth of November will rush on the rocks all at once. If the weather is fair they will deposit their eggs, which takes from three to four weeks, but if a sudden and heavy storm sets in, which happens very often, these fish will leave at once, and will not return again until another year, and the eggs are a total loss, as not one in twenty thousand will be fertilized.

It has been proved, and is a known fact, that where the eggs are taken fertilized, and sent to the hatcheries, seventy-five per cent come to life, and can be planted in the waters under the most favorable conditions. The tiller of the soil must sow and plant, in order to harvest; with his stock and poultry it is the same. Even if he had thousands, the supply would soon decrease if he would not help in the reproduction, taking care of the young, so they can mature and reproduce again.

The same applies to Lake Michigan. Mature and unmatured fish have been taken out, and not enough fish planted to overcome or equalize

the decrease. Each state bordering this lake should have several hatcheries, fishermen should be forced by strict laws to gather and fertilize the eggs of fish, and deliver them to the hatcheries free of cost; and the young fish thereof when ready for planting should be given into the care of a reliable fisherman, who knows where their natural spawning grounds are, and planted on these grounds in a careful, conscientious manner. The fisherman should receive compensation from the State for this work, as a great deal of care must be taken in selecting these grounds, and quite an expense will be connected with same.

Uniform laws as to a closed season should be passed in all states bordering the lake. The size of meshes to be used, and the weight these fish must attain before they can legally be caught and placed on the markets should also be regulated.

This is of vital importance. Otherwise the fishermen in one state will ruin what others are trying to protect and build up. The commercial fisherman should also pay a license to the State in the waters of which he is fishing, and if he violates any of its laws, besides paying the regular fines, this license should be revoked a certain length of time, for first, second and third offenses.

Fish is one of our great natural resources, and in certain localities of ours and the old countries, it is a necessity to sustain life, both to the consumer and the producer. We must not only try to save as much as possible what fish we still have, but in every way to increase their supply.

REPORT OF FISH CULTURES.

W. E. Hutchinson, Supt.

Havana, Illinois, January 6, 1909.

The Honorable, Fish Commissioners, State of Illinois:

Gentlemen—I beg to submit a brief report of the operations of the Illinois State Fish Hatchery at Havana, Illinois, for the year 1908, as follows:

I arrived at Havana on April 21, 1908, to take charge of your station, and had constructed a battery carry fifty-four Downing jars, for hatching pike perch eggs which we were to receive from the U. S. Bureau of Fisheries. I personally brought this consignment of 25,000,000 green eggs to the hatchery from Toledo, Ohio, on April 25th; they were placed in the jars and began to hatch May 9th, and continued hatching until May 16th. Fifteen million were hatched from the lot and distributed as shown by the detailed distribution. While the percentage hatched was apparently low, yet we must take into consideration the short time alloted for constructing the hatching battery, the long distance the green eggs were shipped, and the fact that the eggs obtained were the last of the season.

The original hatching building, which had been constructed before I arrived at Havana, was a one story frame building 32 feet long and 16 feet wide, with concrete floor. This building was later extended 24 feet in length, 10 feet of the east end was partitioned off and ceiled up to serve as an office.

After the pike perch season closed, all equipment was thoroughly cleaned, painted and stored to make room for retaining tanks, which were to hold the fish collected from the overflow lakes along the Illinois river. Six galvanized iron tanks of the following dimensions were purchased: Four 10 feet long, 3 feet wide and 30 inches deep; two 10 feet long, 3 feet wide and 24 inches deep. These tanks were given three coats of asphaltum paint, and were placed two abreast, so that the water of the upper two flowed into the second two, which in turn flowed into the lower two, which discharged the water into a four inch drain tile leading to river. These tanks were later fitted with a one and a quarter inch water pipe over each row, and were equipped with 12 cocks for each tank, which supplied water to all parts of the tanks.

During May, fifty 10 gallon round shoulder transportation cans were purchased, painted, stenciled and numbered, to be used in the distribution of fish to various parts of the State.

On June 12th, the Steamer Illinois delivered the first consignment of fish to the hatchery, they were placed in the various tanks to harden in the cold water for a few days before being shipped away. It is the custom to hold all fish, that have been collected from shallow overflow lakes, in cold water for four or five days without food, which prepares them for distribution, and partially prevents the water from becoming foul enroute.

The first shipment of fish thus collected from the overflow waters was made on June 16th, and continued throughout the summer and fall to November 20th, during which time 266 plants were made from one extremity of the State to the other, distributing 19,247 adult and yearling black bass (Microp-

ierus Salmonides), 8,935 adult and yearling sunfish, 8,610 adult and yearling crappie, 76,655 adult and yearling catfish and 95 yearling carp, as shown by the detailed distribution.

Mr. F. E. Huff was employed on August 12th to assist with the distribution, and was retained at the close of the season to assist in the hatchery.

After the close of the collecting season, all retaining tanks were thoroughly cleaned and painted, and were taken down and stored to make room for two new Clark hatching troughs, which had been purchased to experiment with the hatching of lake trout. These troughs were set up so that the overflow from the upper trough formed the supply for the second or lower trough. The outside of all troughs and supports were given three coats of paint, and the inside of troughs were given two coats of turpentine asphaltum, all boxes and screens used in connection with the hatching troughs were also thoroughly painted with asphaltum.

A galvanized iron picking trough 30 feet long, 12 inches wide, and 2½ inches deep was placed along the south side of hatchery, for holding the trays of eggs while removing the bad eggs from the trays. During the early part of November a consignment of green lake trout eggs were furnished the Commission by Mr. Richard Smith of Waukegan, Ill. These eggs were brought to the hatchery, placed in the hatching troughs, and were given daily attention, but as the water of the hatchery stood at 54 degrees for the greater part of the time of incubation, fungus appeared upon the eggs and spread very rapidly causing a great loss.

The good eggs remaining were developed so rapidly on account of the high temperature of the water, that they had very little vitality when hatched, many of them hatching head first which is contrary to the natural way of leaving the shell. The fry being too weak to transport to Lake Michigan, were planted in the Illinois river near Havana, Illinois.

On January 1, 1909, 7,000,000 eyed white fish eggs, which were furnished the Commission by the U. S. Bureau of Fisheries, were brought from the Put-In-Bay, Ohio, station, and placed in hatching jars at the station. Present indications are that a good per cent of these eggs will be hatched, after which the fry will be liberated in the waters of Lake Michigan bordering this State.

Recommendations

If the policy of the commission is to continue the hatching of lake trout and whitefish, it is respectfully recommended that a permanent hatchery be built at some point on Lake Michigan near the field of operations. I have examined a proposed site on the lake front at Waukegan, Illinois, which I think would be a good location. This hatchery if built, should be supplied with the necessary boilers, pumps, storage tanks, etc., to provide an independent supply of water direct from the lake. Provisions should also be made for the necessary increase of help to operate such a hatchery.

In view of the fact, that the overflow lakes along the Mississippi river in JoDaviess county afford the best field in the State for the collection of fish, that would otherwise perish on account of the water evaporating during the dry summer months; I would respectfully recommend that a collection station be established in this territory at an early date.

I would also recommend that an extra man be employed to assist with the distribution during the summer months; also that 100 specially constructed transportation cans be purchased to be used in the distribution of the fish collected.

Yours respectfully,

W. F. Hutchison,
Superintendent.

REPORT OF DISTRIBUTION.

Detailed Distribution from Havana, Ill., State Fish Hatchery to Date.

PIKE PERCH FRY.

Quiver Lake	Near Havana, Ill.	3,000,000
Illinois River	Havana, Ill.	3,000,000
Rock River	Oregon, Ill.	2,000,000
Deep Lake	Lake Villa, Ill.	2,000,000
Vermillion River	Danville, Ill.	2,000,000
Mantanzas Lake	Mantanzas, Ill.	3,000,000
	Total	15,000,000

Applicant.	Address.	Adt. & Yr. Bass.
Miller Park	Bloomington, Ill.	285
J. Griswold	Colchester, Ill.	20
J. A. Wheeler	Auburn, Ill.	300
Hon. E. D. Reynolds	Rockford, Ill.	220
Hon. Geo. D. Chafee	Shelbyville, Ill.	135
C. L. James	Mattoon, Ill.	130
Fred E. Ames	Waukegan, Ill.	200
Bachelor's Club	Waukegan, Ill.	245
John Bennett	Decatur, Ill.	132
Arthur Powell	Taylorville, Ill.	70
H. H. Harris	Champaign, Ill.	50
A. C. Patton	Flanagan, Ill.	25
L. V. Pearre	Pontiac, Ill.	170
Lewis Holliway	Wing, Ill.	25
J. F. Westphall	Alden, Ill.	85
Hon. F. J. McNichols	Lake Villa, Ill.	90
E. H. Baldwin	Litchfield, Ill.	50
Mayor C. F. Lender	Centralia, Ill.	25
H. J. DeHaan	East St. Louis, Ill.	50
Logan Hay	Springfield, Ill.	25
L. S. Baker	Decatur, Ill.	25
Chas. W. Schwerdt	Marion, Ill.	110
Eugene L'Hote	Milford, Ill.	60
Hon. E. C. Curtis	Momence, Ill.	60
Bert Lakin	Streator, Ill	50
Hon. J. C. McKenzie	Elizabeth, Ill.	60
Dr. J. G. Woker	Pearl City, Ill.	100
Maple Lake Fishing Club	Palmyra, Ill.	75
H. M. Levering	Petersburg, Ill.	50
Walter G. Hunt	Brighton, Ill.	200
C. E. Smith	Mitchell, Ill.	50
Soldiers' Home	Danville, Ill.	120
Rod and Gun Club	Danville, Ill.	120

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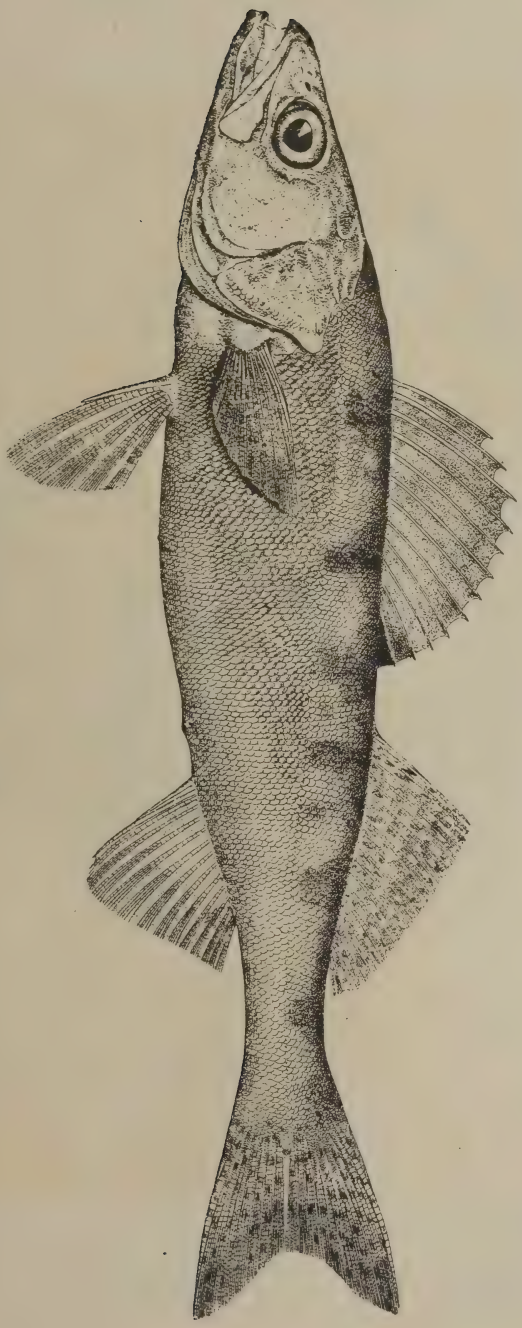
A SEVEN-THOUSAND-POUND CATCH OF PADDLE-FISH.



THE SAUGER OR LAND PIKE.

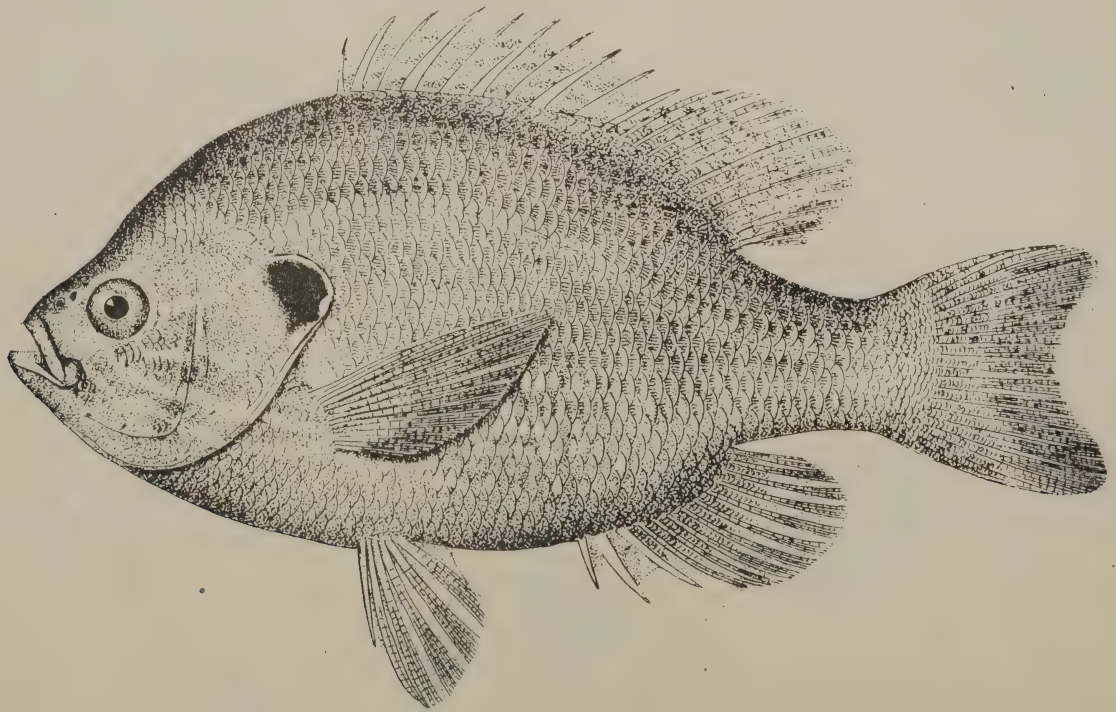
Stizostedium canadense (Smith), Jordan. (p. 424.)

Detailed Distribution—Continued.

Applicant.	Address.	No.
Rod and Gun Club	Bloomington, Ill.	150
J. S. Mattoon	Greenup, Ill.	100
J. M. Baird	Olney, Ill.	100
O. J. Bailey	Parkersburg, Ill.	75
H. E. Phillips	Princeton, Ill.	60
John R. Thompson	Libertyville, Ill.	270
Samuel Insull	Libertyville, Ill.	60
F. M. Robertson	Virginia, Ill.	45
Richard Mills	Virginia, Ill.	45
Geo. A. Barr	Joliet, Ill.	170
Lords Park	Elgin, Ill.	25
Purington Brick Co	Galesburg, Ill.	150
Frederick Von Owen	Naperville, Ill.	150
Perry Hughes	Clinton, Ill.	200
W. H. Barrick	Mt. Olive, Ill.	135
Elmer F. Darnell	Hillsboro, Ill.	100
David Merry	Greenville, Ill.	75
Homer Park	Homer, Ill.	210
J. F. Pearn	Ashland, Ill.	135
B. E. Gridley	Virginia, Ill.	150
H. J. Marbold	Greenview, Ill.	100
Jas. Sommerville	Chrisman, Ill.	30
Hon. C. P. Hitch	Paris, Ill.	120
Nelson Smith	Mt. Vernon, Ill.	30
Citizens' Electric Co	Mt. Vernon, Ill.	230
John W. Mitchell	Marion, Ill.	180
Fox River Bait Casting Club	Aurora, Ill.	300
Puterbaugh Bros	Mackinaw, Ill.	100
Hon. M. B. Bailey	Danville, Ill.	210
Decatur Fishing Club	Decatur, Ill.	210
Sangamon River	Monticello, Ill.	195
Chicago N. W. R. R. Co	Chicago, Ill.	600
Frank B. Bowman	East St. Louis, Ill.	250
Geo. Wirt	Alpha, Ill.	60
Crescent Lake Club	Alpha, Ill.	250
I. C. Railroad Co	Monee, Ill.	200
John J. Brown and others	Vandalia, Ill.	300
D. G. Allen	Forreston, Ill.	150
Stephenson Co. Fishing Club	Freeport, Ill.	250
J. F. Groves	Carlinville, Ill.	90
W. Meiners	Carlinville, Ill.	50
Frank W. Lauck	Brighton, Ill.	60
Bert C. Waggoner	Edwardsville, Ill.	150
T. J. Wilson	Hillsboro, Ill.	75
Ben H. Wilson	Hillsboro, Ill.	75
J. T. Clendenin	Sparta, Ill.	165
H. B. Porter	Vergennes, Ill.	50
B. L. Wiley	Makanda, Ill.	25
Ben Davis	Anna, Ill.	100

SUN-FISH.

Hon. E. D. Reynolds	Rockford, Ill.	100
Hon. Geo. D. Chafee	Shelbyville, Ill.	75
C. L. James	Mattoon, Ill.	75
Arthur Powell	Taylorville, Ill.	100
E. H. Baldwin	Litchfield, Ill.	20
Mayor C. F. Lender	Centralia, Ill.	100



THE PUMPKIN-SEED OR SUNFISH.

Lepomis gibbosus (L.), McKay. (p. 405.)

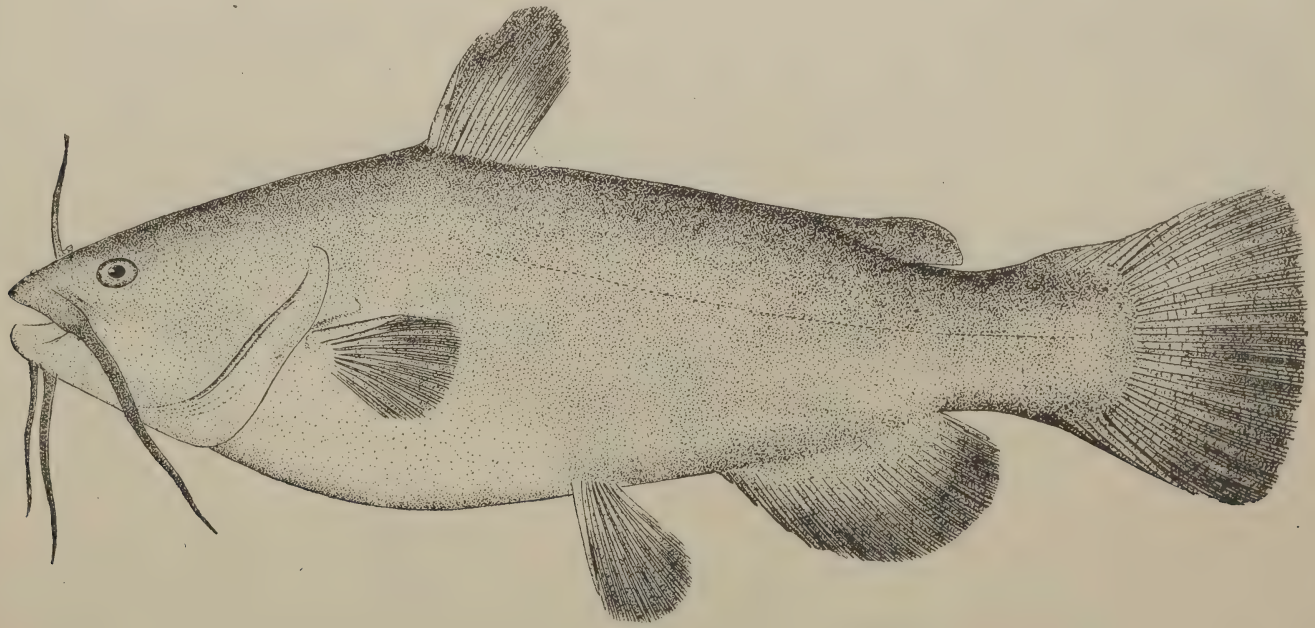
Detailed Distribution—Continued.

Sun-Fish—*Concluded.*

Applicant.	Address.	No.
H. J. DeHaan	East St. Louis, Ill.	50
Logan Hay	Springfield, Ill.	200
L. S. Baker	Decatur, Ill.	100
Chas. W. Schwerdt	Marion, Ill.	200
Hon. J. C. McKenzie	Elizabeth, Ill.	100
Dr. J. G. Woker	Pearl City, Ill.	100
H. M. Levering	Petersburg, Ill.	50
Rod and Gun Club	Danville, Ill.	150
H. J. Marbold	Greenview, Ill.	25
W. Meiners	Carlinville, Ill.	25
Frank W. Lauck	Brighton, Ill.	50
E. I. Hampton	Macomb, Ill.	1,000

Cat-Fish.

J. Griswold	Colchester, Ill.	700
J. A. Wheeler	Auburn, Ill.	2,100
Hon. E. D. Reynolds	Rockford, Ill.	1,400
Hon. Geo. D. Chafee	Shelbyville, Ill.	1,600
C. L. James	Mattoon, Ill.	1,800
Fred E. Ames	Waukegan, Ill.	700
Bachelor's Club	Waukegan, Ill.	700
John Bennett	Decatur, Ill.	1,000
Arthur Powell	Taylorville, Ill.	700
H. H. Harris	Champaign, Ill.	700
A. C. Patton	Flanagan, Ill.	700
L. V. Pearre	Pontiac, Ill.	1,000
Lewis Holliway	Wing, Ill.	700
J. F. Westphall	Alden, Ill.	700
Hon. F. J. McNichols	Lake Villa, Ill.	700
E. H. Baldwin	Litchfield, Ill.	1,000
Mayor C. F. Lender	Centralia, Ill.	1,000
H. J. DeHaan	East St. Louis, Ill.	700
Logan Hay	Springfield, Ill.	350
L. S. Baker	Decatur, Ill.	350
Chas. W. Schwerdt	Marion, Ill.	1,050
Eugene L'Hote	Milford, Ill.	350
Hon. E. G. Curtis	Momence, Ill.	5,000
Bert Lakin	Streator, Ill.	700
Hon. J. C. McKenzie	Elizabeth, Ill.	700
Dr. J. C. Woker	Pearl City, Ill.	700
H. M. Levering	Petersburg, Ill.	700
Walter G. Hunt	Brighton, Ill.	700
C. E. Smith	Mitchell, Ill.	350
O. J. Bailey	Parkersburg, Ill.	35
Samuel Insull	Libertyville, Ill.	50
F. M. Robertson	Virginia, Ill.	25
Lord's Park	Elgin, Ill.	25
Frederick Von Oven	Naperville, Ill.	800
Jas. Sommerville	Chrisman, Ill.	1,500
Hon. C. P. Hitch	Paris, Ill.	3,500
Nelson Smith	Mt. Vernon, Ill.	500
Puterbaugh Bros.	Mackinaw, Ill.	400
I. C. Railroad Co	Monee, Ill.	30
J. F. Groves	Carlinville, Ill.	400



THE BULL-HEAD.

Amiurus melas (Raf.), Jord. & Copeland. (p. 628.)

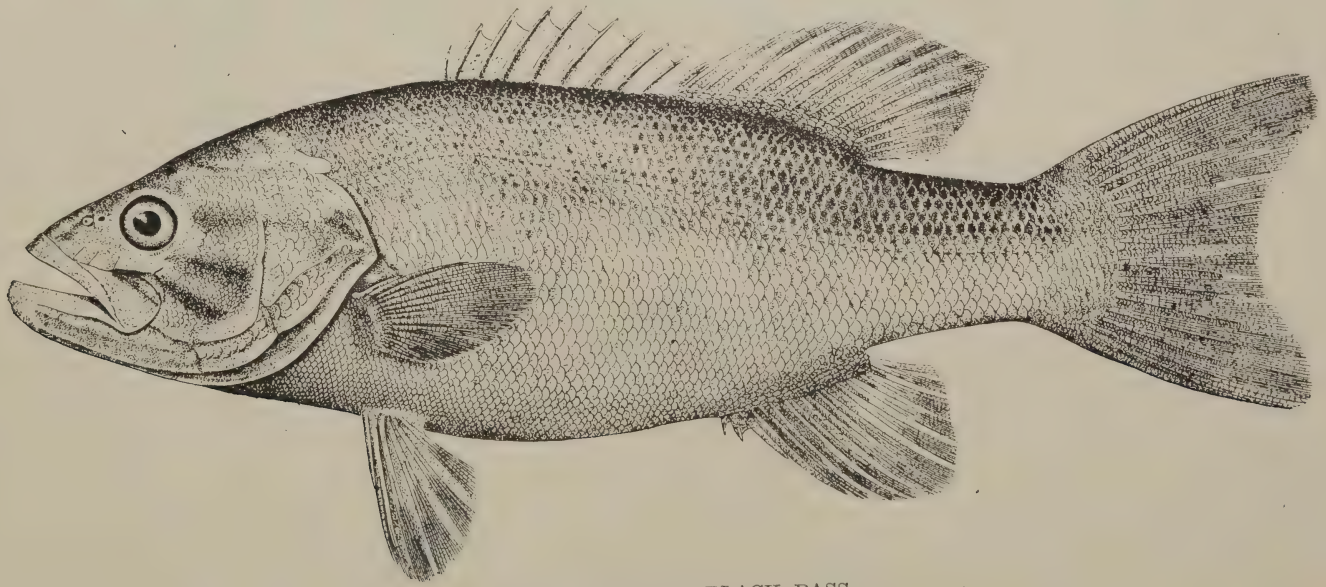
Detailed Distribution—Continued.

Cat-Fish—*Concluded.*

Applicant.	Address.	No.
W. Meiners	Carlinville, Ill.	800
Frank W. Lauck	Brighton, Ill.	800
Bert C. Waggoner	Edwardsville, Ill.	800
J. T. Clendenin	Sparta, Ill.	800
H. B. Porter	Vergennes, Ill.	800
B. L. Wilkey	Makanda, Ill.	800
N. I. Hampton	Macomb, Ill.	1,400
J. C. Spotts & Son	Marshall, Il.	500
W. J. Humphreys	Elmwood, Ill.	1,000
G. J. Dowell	Franklin, Ill.	2,000
Soldiers' Home	Quincy, Ill.	50
U. S. Bureau of Fisheries	Meredosia, Ill.	25,000
Illinois River	Havana, Ill.	5,000
Walter H. Seward	Chicago Lawn, Ill.	800
T. W. Hoyt	Huntley, Ill.	2,000
A. B. Scott	Mt. Zion, Ill.	1,500
F. W. Barthelman	Sheffield, Ill.	400
Theodore Boltenstein	Cambridge, Ill.	400

Bass.

F. W. Barthelmen	Sheffield, Ill.	150
Theodore Boltenstein	Cambridge, Ill.	400
Chas. W. Peters	McHenry, Ill.	420
C. M. Whipple	Ingleside, Ill.	200
Benj. Heller	Grays Lake, Ill.	200
W. D. Ball	Table Grove, Ill.	160
John D. Oldknow	Table Grove, Ill.	160
Monmouth Brick & Tile Co	Monmouth, Ill.	150
Nichols Park Board	Jacksonville, Ill.	150
Franklin Outing Club	Franklin, Ill.	75
Jesse Diamond	Smotherville, Ill.	150
C. H. Wellman	Cartter, Ill.	150
J. K. Butz and others	Potomac, Ill.	200
Chas. Glenn	DeWitt, Ill.	30
Hiram Coombs	Grays Lake, Ill.	360
C. F. Strong	Marion, Ill.	35
C. C. Binkley	Marion, Ill.	75
Dr. E. A. Debbs	Marion, Ill.	50
F. A. Sinks	West Frankfort, Ill.	25
H. H. Pierce	Pierce, Ill.	75
F. E. Sims	Pontiac, Ill.	480
E. A. Curtis	Kankakee, Ill.	250
Frank Fenderson	Round Lake, Ill.	250
Bert Lakin	Streator, Ill.	200
Rock River	Dixon, Ill.	200
Illinois River	Peoria, Ill.	75
A. B. Shinebarker	Custer Park, Ill.	100
Brownlee Improvement Co	Thornton, Ill.	100
C. W. Hastings	Decatur, Ill.	25
C. L. James	Mattoon, Ill.	75
W. A. Ellison	Lerna, Ill.	150
P. C. Marshall	Newton, Ill.	75
Twin City Fishing Club	Sterling, Ill.	100
Joseph Thompson	Wilmington, Ill.	50



THE SMALL-MOUTH BLACK BASS.

Micropterus Dolomiei, Lac. (p. 401.)

Detailed Distribution—Continued.

Bass—*Concluded.*

Applicant.	Address.	No.
Joseph C. Bradon	Rockport, Ill.	40
Ben Dix	Lake Villa, Ill.	150
Mayor C. F. Lender	Centralia, Ill.	75
Chas. Fenchter, Jr	Cairo, Ill.	75
Crystal Lake	Urbana, Ill.	150
Lone Tree Fishing Club	Lone Tree, Ill.	125
Dr. Edward Shaffer	Grays Lake, Ill.	125
Tom Graham	Long Lake, Ill.	200
R. K. DeFreitas	Jacksonville, Ill.	150
Andrew S. Russel	Woodson, Ill.	100
Chas. Peters	Fox Lake, Ill	300
Fred Thiel	Kewanee, Ill.	150
Frank Simpson	Kewanee, Ill.	150
Albert Dukes	St. Joseph, Ill.	100
Sam Lehman	Sidney, Ill.	100
J. F. Heffernan	Bloomington, Ill.	300
Walter G. Skinner	Chrisman, Ill.	100
Edward Herbert	Marshall, Ill.	200
Chet Gere	Urbana, Ill.	750

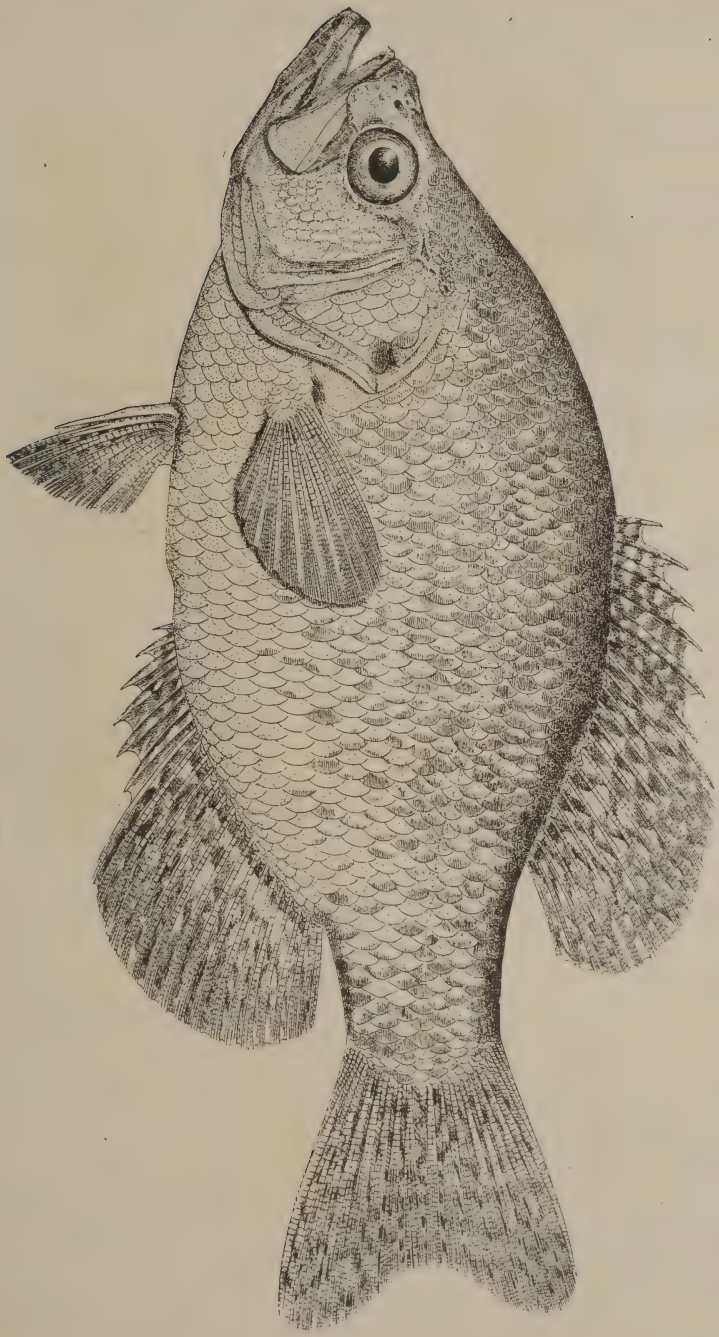
Sun-Fish.

Jesse Diamond	Smotherville, Ill	100
Chas. Glenn	De Witt, Ill	100
C. F. Strong	Marion, Ill.	150
C. C. Binkly	Marion, Ill.	150
Dr. E. A. Debbs	Marion, Ill.	150
F. A. Sinks	West Frankfort, Ill.	150
F. E. Sims	Pontiac, Ill.	200
Illinois River	Peoria, Ill.	200
A. B. Shinebarker	Custer Park, Ill.	200
Brownlee Improvement Co	Thornton, Ill.	300
C. W. Hastings	Decatur, Ill.	100
W. A. Ellison	Lerna, Ill.	100
Twin City Fishing Club	Sterling, Ill.	550
Joseph Thompson	Wilmington, Ill.	500
Crystal Lake	Urbana, Ill.	800
F. E. Sims	Pontiac, Ill.	700
Fred Thiel	Kewanee, Ill.	200
Frank Simpson	Kewanee, Ill.	200
Albert Dukes	St. Joseph, Ill.	625
Sam Lehman	Sidney, Ill.	625
Walter G. Skinner	Chrisman, Ill.	200

Crappie.

Chas. Glenn	Dewitt, Ill.	100
Hiram Coombs	Grayville, Ill.	400
L. C. Binkley	Marion, Ill.	50
H. H. Pierce	Pierce, Ill.	50
Bert Lakin	Streator, Ill.	50
Rock River	Dixon, Ill.	600
Illinois River	Peoria, Ill.	200
A. B. Shinebarker	Custer Park, Ill	250
Brownlee Improvement Co	Thornton, Ill.	250

STAKING THE CORK LINE.



THE CRAPPIE OR SAC-A-LAIT.
Pomoxys annularis, Raf. (p. 407.)

Detailed Distribution—Continued.

Crappie—*Concluded.*

Applicant.	Address.	No.
C. W. Hastings	Decatur, Ill.	60
C. L. Jones	Mattoon, Ill	120
P. C. Marshall	Newton, Ill.	60
Twin City Fishing Club	Sterling, Ill.	300
Joseph Thompson	Wilmington, Ill.	350
Joseph C. Braden	Rockport, Ill.	70
Ben Dix	Lake Villa, Ill.	600
Mayor C. F. Lender	Centralia, Ill.	200
Chas. Fenchter, Jr	Cairo, Ill.	200
Crystal Lake	Urbana, Ill.	600
Lone Tree Fishing Club	Lone Tree, Ill.	300
Dr. Edward Shaffer	Grays Lake, Ill.	300
R. K. DeFreitas	Jacksonville, Ill.	250
Andrew S. Russel	Woodson, Ill.	250
Chas. Peters	Fox Lake, Ill.	700
F. E. Sims	Pontiac, Ill.	600
W. C. Smith	Mt. Zion, Ill.	150
H. R. Kingman	Mt. Vernon, Ill.	400
Albert Duskes	St. Joseph, Ill.	400
Sam Lehman	Sidney, Ill.	400
Nathan G. Skinner	Chrisman, Ill.	100

Carp.

Paul F. Beich Co	Bloomington, Ill.	80
Lords Park	Elgin, Ill.	15

Fish received from the overflows of the Mississippi river in Jo Daviess county and returned to living waters.

Total number of crappies	267,500
Total number of black bass	154,000
Total number of sunfish	37,200
Total number of wall eyed pike	19,200
Total number of perch	12,550
Total number of cat fish	9,700
Total number of carp	75,000
Total number of buffalo	40,000
Total	615,150

Entire distribution from Havana, Illinois State Fish Hatchery from July 1st to November 1st, 1908:

Pike perch fry	15,000,000
One year and adult black bass	19,247
One year and adult sun fish	8,935
One year and adult cat fish	76,655
One year and adult croppie	8,610
Carp	95
Fish released from La Marsh district and put in Illinois River	2,750,000
Fish released from overflows of Mississippi River in JoDaviess county and put in living waters	615,150
Grand total	18,477,942

DISTRIBUTION BY UNITED STATES FISH COMMISSION.

The following list comprises such plants as were made by the United States Fish Commission, except in a few instances. The collection and plants were made at the expense of the United States Fish Commission:

S. P. BARTLETT, *Secretary.*

BASS.

Applicant.	Address.	No.
A. G. Lightner	Percy, Ill.	200
J. H. Severe	Shelbyville, Ill.	100
Fishing Club	Lockport, Ill.	100
R. J. McElvain	Murphysboro, Ill.	100
W. F. Clendenin	Sparta, Ill.	100
Citizens' Gas, Elec. & Heating Co	Mt. Vernon, Ill.	100
Ill. Sc. Ry. Co	Sparta, Ill.	100
Cyrus Wolff	Temple Hill, Ill.	150
Judge Hindes	Lewiston, Ill.	80
T. A. Reynolds	Grayslake, Ill.	200
N. D. Pratt	Grayslake, Ill.	200
James Condra	Henderson, Ill.	80
E. H. Bradford	Quincy, Ill.	40
John S. Goodwin	Naperville, Ill.	40
Stephenson County Fish and Game Protective Ass'n	Freeport, Ill.	200
Frank R. Covey	Belvidere, Ill.	100
Edwin Harlan	Marshall, Ill.	40
C. P. Hitch	Paris, Ill.	80
T. E. Habel	Rossville, Ill.	40
Edward C. Curtis	Grand Park, Ill.	40
Citizens Water Works Co	Quincy, Ill.	250
S. W. Caldwell	Concord, Ill.	100
Cyrus Wolf	Temple Hill, Ill.	200
W. F. Gintz	Temple Hill, Ill.	200

CRAPPIE.

Frank Dorwin	Decatur, Ill.	100
A. G. Lightner	Percy, Ill.	100
Splatter Dock Fishing Club	Rockport, Ill.	200
Thomas W. Scott	Springfield, Ill.	200
W. D. Higdon	Tuscola, Ill.	200
Edw. Austin	Effingham, Ill.	300
Burrie Harrie	McLeansboro, Ill.	200
Nashville Elec. Light Co	Nashville, Ill.	200

Detailed Distribution—Continued.

Crappie—*Concluded.*

Applicant.	Address.	No.
James Mitchell	Belleville, Ill.	200
M. R. Fakes	Carbondale, Ill.	200
Edward Leopold	Belleville, Ill.	200
John Rodenheiser	Belleville, Ill.	200
F. W. Gintz	Belleville, Ill.	200
F. W. Gintz	Belleville, Ill.	200
E. W. West	Belleville, Ill.	200
S. W. Caldwell	Concord, Ill.	100
J. L. Flanngen	Concord, Ill.	200
Nichols Park Com	Jacksonville, Ill.	100
Herman Inegen	Danville, Ill.	100
R. G. Wilson	Decatur, Ill.	200
John Montiluis	Piper City, Ill.	400
J. W. Duncan	Palmyra, Ill.	20
H. A. Coleman	Palmyra, Ill.	20
F. A. Gelder	Palmyra, Ill.	20
John Flynn	Franklin, Ill.	400
A. S. Baldwin	Chicago, Ill.	350
A. S. Baldwin	Chicago, Ill.	350
Ill. Central R. R. Co	Chicago, Ill.	250
A. S. Baldwin	Chicago, Ill.	350
A. S. Baldwin	Chicago, Ill.	250
A. S. Baldwin	Chicago, Ill.	250
A. S. Baldwin	Chicago, Ill.	850
H. C. Patton	Flanagan, Ill.	20
Geo. W. Busse	Edwardsville, Ill.	20

Ring Perch.

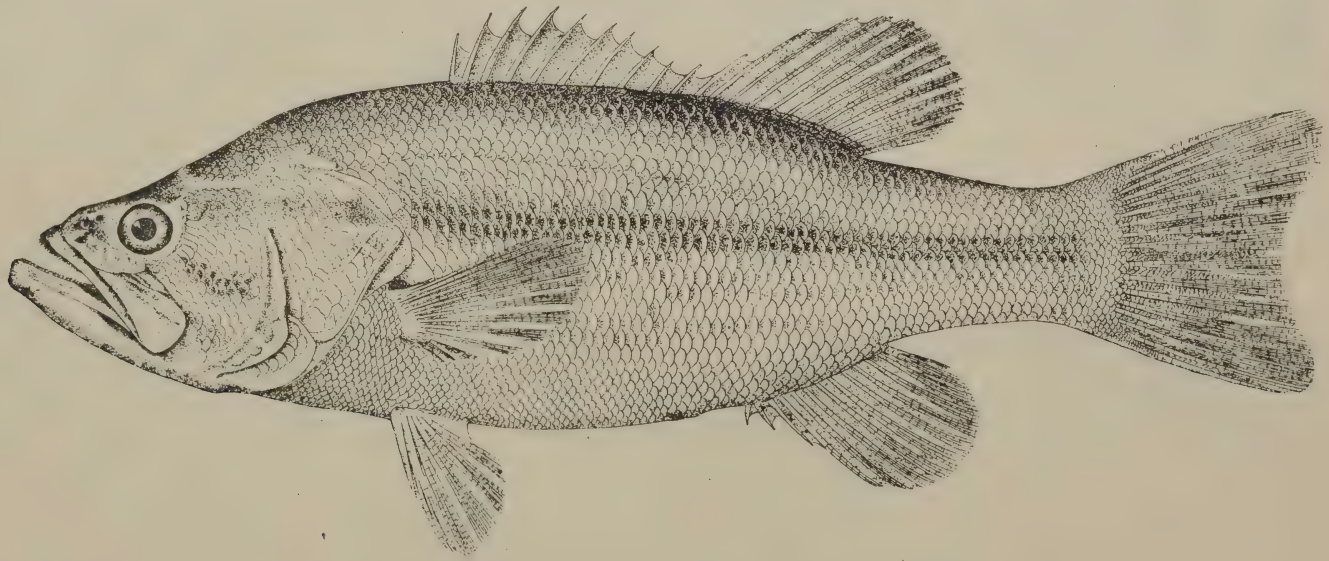
Frank Dorwin	Decatur, Ill.	100
Herman Inegen	Danville, Ill.	100
Nichols Park Com	Jacksonville, Ill.	100

Yellow Perch.

J. H. Severe	Shelbyville, Ill.	100
S. W. Caldwell	Concord, Ill.	200
R .G. Wilson	Decatur, Ill.	200
John Montiluis	Piper City, Ill.	125
A. S. Baldwin	Chicago, Ill.	100
A. S. Baldwin	Chicago, Ill.	100
Ill. Central R. R. Co	Chicago, Ill.	100
A. S. Baldwin	Chicago, Ill.	350
A. S. Baldwin	Chicago, Ill.	500
H. C. Patton	Flanagan, Ill.	12

Bream.

Frank Dorwin	Decatur, Ill.	200
Splatter Dock Fishing Club	Rockport, Ill.	200
Judge Hindes	Lewistown, Ill.	250
Crescent Lake Club	Alpha, Ill.	100
James Condra	Henderson, Ill.	150
E. H. Bradford	Quincy, Ill.	100
J. E. Williamson	Wataga, Ill.	400



THE BIG-MOUTHED BLACK BASS, OR OSWEGO BASS.

Micropterus salmoides (Lac.), Henshall. (p. 401.)

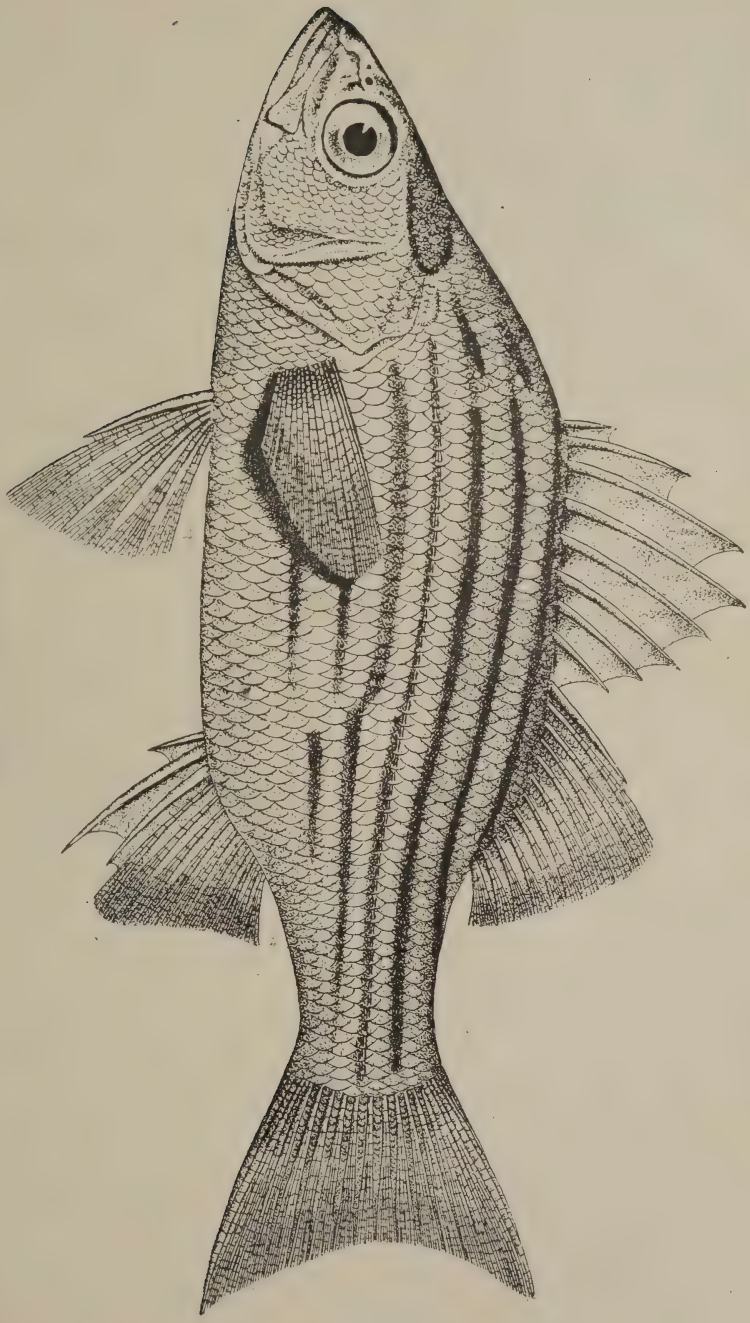
Detailed Distribution—Concluded.

Bream—*Concluded.*

Applicant.	Address.	No.
John S. Goodwin	Naperville, Ill.	400
Stephenson Co. Fish & Game Protection Assn.	Freeport, Ill.	400
T. E. Habel	Rossville, Ill.	200
Edward C. Curtis	Grand Park, Ill.	200
Thos. W. Scott	Springfield, Ill.	250
W. D. Higdon	Tuscola, Ill.	250
S. A. Annin	Oakland, Ill.	250
Wm. Latch	Strasburg, Ill.	250
Louis Lummering	Mt. Olive, Ill.	250
Wm. Hawkins	Mt. Olive, Ill.	250
Paul H. Bierman	Alton, Ill.	250
H. O. Moffet	Modesto, Ill	250
J. A. Smith	Palmyra, Ill.	250
Fred A. Ford	Waverly, Ill.	250
M. A. Brayford	Macoupin, Ill.	250
Frank L. Rhodes	Macoupin, Ill.	250
Macoupin Club	Carlinville, Ill.	250
W. H. Meiners	Carlinville, Ill.	250
Geo. M. McCormick	Alton, Ill.	250
Escott G. Byford	Bryton, Ill.	250
M. M. Ohmstead	Macoupin, Ill.	250
Jesse Abney	Marion, Ill.	200
B. McClaflin	Kell, Ill.	200
John Patton	Mt. Vernon, Ill.	200
Belle Patton	Mt. Vernon, Ill.	200
Sam'l Schroeder	Altamont, Ill.	200
L. S. Dorsey	Moro, Ill.	200
A. H. Miller	Marion, Ill.	200
M. W. Harrioson	Collinsville, Ill.	250
Allen Miller	Marion, Ill.	200
F. Mohelenbrock	Campbell Hill, Ill.	200
A. S. Lightner	Percy, Ill.	200
"Jolly 15" Fishing Club	Sparta, Ill.	200
Wm. A. Hills	Columbia, Ill.	200
John S. Bostwick	Renault, Ill.	200
G. W. Franklin	Waterloo, Ill.	200
Western Brewery Co	Belleville, Ill.	400
Heinemann Bros	Belleville, Ill.	200
Andrew Caldwell	Carbondale, Ill.	200
Wm. Oldenhip	Carbondale, Ill.	200
Adam Grieshammer	Columbia, Ill.	200
S. A. Fairbank	Thomasville, Ill.	250
Nicholas Park Com	Jacksonville, Ill.	200
Herman Ingen	Danville, Ill.	200
John Montiluis	Piper City, Ill.	400
John Flynn	Franklin, Ill.	800
A. S. Baldwin	Chicago, Ill.	700
Ill. Cent. R. R. Co	Chicago, Ill.	250
A. S. Baldwin	Chicago, Ill.	1,700
Geo. W. Busse	Edwardsville, Ill.	30

Cat Fish.

A. S. Lightner	Percy, Ill.	200
John Montiluis	Piper City, Ill.	150



THE YELLOW BASS.

Roccus interruptus (Gill), J. & G. (p. 431.)

Total Distribution for 1907.

Bass	2,840
Croppie	7,150
Ring perch	300
Yellow perch	1,787
Bream	15,630
Cat fish	350
Total	28,057
Total distribution of the Illinois Fish Commission	18,506,749

INSHORE WITH THE HAUL.

STATEMENT OF FISH SHIPPED FROM ILLINOIS RIVER FROM JANUARY 1, 1907, TO JANUARY 1, 1909.

	1907-8	1908-9	Total.
La Salle	232,000	270,000	502,000
DePue	11,000	19,000	30,000
Bureau	42,000	56,000	98,000
Putnam	120,000	175,000	295,000
Henry	700,000	750,000	1,450,000
Sparland	75,000	102,000	177,000
Chillicothe	275,000	350,000	625,000
Peoria	1,500,000	2,800,000	4,300,000
Pekin	2,800,000	3,400,000	6,200,000
Havana	2,700,000	3,800,000	6,500,000
Bath	1,500,000	1,900,000	3,400,000
Browning	1,400,000	1,700,000	3,100,000
Beardstown	1,800,000	1,950,000	3,750,000
Meredosia	500,000	684,000	1,184,000
Naples	17,000	22,000	39,000
Valley City	40,000	62,000	102,000
Pearl	280,000	325,000	605,000
Kampsville	375,000	425,000	800,000
Hardin	50,000	120,000	170,000
Grafton	322,000	360,000	682,000
Totals	14,739,000	19,270,000	34,009,000

RECEIPTS FOR FISHING LICENSE FROM JULY 1, 1907, TO JULY 1, 1908.

COUNTIES.	1907						1908						Total.
	July.	August.	September	October.	November	December	January.	February.	March.	April.	May.	June.	
Adams				$100 90	$ 86 40	$ 24 90	$ 4 95	$ 4 95	$88 90				$311 00
Alexander		$ 46 00	$ 10 50	7 00		5 00		5 00	5 00	$ 4 00	$ 6 50		89 00
Bond													
Boone													
Brown						5 00							5 00
Bureau				5 00	55 00	3 95			12 55	15 00	55 84		147 32
Calhoun		4 93	14 31	82 14	216 56	135 58	60 71	50 83	16 33				581 44
Carroll			50 00	15 00							4 95		69 95
Cass							482 75						482 75
Champaign													
Christian													
Clark			3 50			3 00	5 00				18 40		29 90
Clay													
Clinton													
Coles													
Cook			420 85	20 00	6 00	5 00		50	2 50	36 50		115 00	606 35
Crawford		5 00	5 50	34 00	5 00						13 00		62 50
Cumberland													
DeKalb													
DeWitt													
Douglas													
DuPage													
Edgar													
Edwards		9 00	2 50	50									12 00
Effingham													
Fayette													
Ford													
Franklin													
Fulton		4 90			5 40	14 90	19 90						45 10
Gallatin					4 93						43		5 36
Greene								9 50			10 00		19 50
Grundy													
Hamilton													
Hancock		35 00			4 93		4 93		4 95	9 93			59 74
Hardin			3 40										3 40
Henderson			37 50	15 00	10 00	5 00		10 00					77 50
Henry								13 50					13 50

Iroquois													
Jackson		19 88	9 90	6 00								11 00	46 78
Jasper						1 00				1 50	12 00		14 50
Jefferson													
Jersey		127 50	19 00	21 50	10 00	5 00	5 00						188 00
JoDaviess		10 00	20 00	10 00							10 00		50 00
Johnson													
Kane													
Kankakee													
Kendall													
Knox													
Lake				315 00	150 00	20 00						5 00	490 00
LaSalle		31 38	18 38	5 93	5 00		5 00				3 43		69 12
Lawrence												21 00	21 00
Lee													
Livingston													
Logan													
Macon													
Macoupin													
Madison		5 30	13 50	8 00	8 00	10 00					5 00		49 80
Marion													
Marshall		15 50	74 50		199 00	52 00	64 00				75 00		480 00
Mason		56 77	80 17	104 62	89 67	1,135 82	29 85	99 82	44 00	41 29			1,638 45
Massac		23 88	1 00	11 40	90			2 40	2 50		1 50	2 50	46 08
McDonough													
McHenry													
McLean													
Menard													
Mercer		75 00	80 00	50 00	4 90								209 90
Monroe			5 50		11 00	40 50					10 85	22 00	89 85
Montgomery													
Morgan		11 45	6 45	239 00	74 50	16 00		41 00			3 00		391 40
Moultrie													
Ogle					35 00	11 00							46 00
Peoria		122 00	41 50	104 50	182 50	57 00	12 00	386 00	15 50	46 00			967 00
Perry													
Piatt													
Pike		75 95	44 28	31 38	180 17	57 40	80 63	72 33	32 80	32 85			607 79
Pope													
Pulaski							24 48					22 50	44 98
Putnam						17 00			7 50				24 50
Randolph				25 90	18 38	9 90		85		26 50	3 80		85 33
Richland													
Rock Island		10 80	6 93	5 00		21 50		5 00	10 00	5 00			64 28
Saline													
Sangamon													
Schuyler			16 12			400 00							416 12
Scott		3 95	26 80	1 95	56 30			15 38		12 38			116 76
Shelby													
Stark													

Receipts for Fishing License—Concluded.

Counties	1907						1908						Total
	July.	August.	September	October.	November	December	January.	February.	March.	April.	May.	June.	
St. Clair	.....	$ 14 00	$ 58 00	$101 20	$ 11 50	.....	.....	$ 4 00	.....	$ 43 00	.....	.....	$231 70
Stephenson	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tazewell	.....	.....	.....	140 90	160 25	$ 57 40	$231 50	.....	.....	.....	.....	$307 50	897 55
Union	.....	50	13 50	25 50	35 50	15 50	.....	.....	$ 3 00	8 00	.....	.....	101 50
Vermilion	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wabash	.....	1 00	36 50	3 00	.....	.....	.....	.....	.....	1 50	$ 50	.....	42 50
Warren	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wayne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
White	.....	19 90	.....	21 90	.....	.....	.....	10 00	2 95	4 90	2 95	.....	62 60
Whiteside	.....	.....	.....	.....	9 83	9 80	40	.....	.....	.....	.....	11 36	31 39
Will	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Williamson	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winnebago	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Woodford	.....	.....	2 50	7 00	.....	5 00	.....	.....	.....	.....	.....	.....	14 50
Totals	.....	$729 64	$1,122 59	$1,519 22	$1,636 62	$2,144 13	$1,029 10	$731 06	$206 47	$106 13	$167 37	$468 36	$10,160 69

RECEIPTS FOR FISHING LICENSE FROM JULY 1, 1908 TO JULY 1, 1909.

COUNTIES.	1908.						1909.						Total.
	July.	August.	September	October.	November	December	January.	February.	March.	April.	May.	June.	
Adams		$20 00		$ 74 90	$ 24 90								
Alexander		22 00		10 00	5 00								
Bond													
Boone													
Brown													
Bureau				21 40	52 31								
Calhoun				49 80	76 50								
Carroll		9 92											
Cass				185 40	113 85								
Champaign													
Christian													
Clark					11 50								
Clay													
Clinton													
Coles													
Cook				12 00	5 00								
Crawford	$10 40	37 50		1 50									
Cumberland													
DeKalb													
DeWitt													
Douglas													
DuPage													
Edgar													
Edwards		10 58											
Effingham													
Fayette													
Ford													
Franklin													
Fulton													
Gallatin													
Greene													
Grundy													
Hamilton													
Hancock					4 95								
Hardin													
Henderson				15 50	10 00								
Henry													

Receipts for Fishing License—Concluded.

Counties.	1908.						1909.						Total.
	July.	August.	September	October.	November	December	January.	February.	March.	April.	May.	June.	
Iroquois													
Jackson													
Jasper													
Jefferson													
Jersey				$ 72 00	$ 5 00								
Jo Daviess				40 00	5 00								
Johnson													
Kane													
Kankakee													
Kendall													
Knox													
Lake				150 00	25 00								
LaSalle		$21 38		13 00	5 00								
Lawrence													
Lee				5 50	5 00								
Livingston													
Logan													
Macon													
Macoupin													
Madison		7 30											
Marion													
Marshall													
Mason				106 78	118 88								
Massac													
McDonough													
McHenry													
McLean													
Menard													
Mercer				130 00									
Monroe		9 85			49 90								
Montgomery													
Morgan				62 00	15 50								
Moultrie													
Ogle				36 00									
Peoria				208 88	102 00								

Perry													
Piatt													
Pike				28 57	185 93								
Pope													
Pulaski													
Putnam				10 00									
Randolph				23 40	6 40								
Richland													
Rock Island													
Saline													
Sangamon													
Schuyler				268 00	149 00								
Scott													
Shelby													
Stark													
St. Clair													
Stephenson													
Tazewell													
Union		64 00		92 00									
Vermilion													
Wabash		6 00		5 00	1 00								
Warren													
Washington													
Wayne	$1 50												
White													
Whiteside													
Will													
Williamson													
Winnebago													
Woodford													
Total	$11 90	$208 45		$1,621 63	$977 62								

MISSISSIPPI RIVER AND ITS TRIBUTARIES WHOLLY OR PARTLY WITHIN THE STATE OF ILLINOIS.

Ohio river.
Big Muddy river.
Kaskaskia river.
Mary's river.
Illinois river.
Fox river.
Henderson river.
Edwards river.
Rock river.
Plum river.
Apple river.
Sny Ecarte river.

Creeks tributary to Mississippi river—
- Clear creek.
- Fountain creek.
- Cahokia creek.
- Piasa creek.
- Kiset creek.
- Mill creek.
- Rock creek.
- Bear creek.
- Honey creek.
- Dugout creek.
- Cedar creek.
- Ursa creek.
- Pope creek.
- Eliza creek.
- Copper creek.
- Johnson creek.
- Big Rush creek.
- Small Fox creek.

Tributaries to Ohio river—
- Saline river.
  - North Fork of Saline river.
  - South Fork of Saline river.
- Embarras river.

Tributaries to Big Muddy river—
- Kingkaid creek.
- Beaucoup creek.
  - Pipe Stone creek.
    - Galum creek.
  - Little Beaucoup creek.
  - Swanwick creek.
  - Locust creek.
  - Painter creek.
- Big Crab Orchard creek.
  - Crab Orchard creek.
- Little Muddy river.
  - Carson creek.
- Middle Fork of Big Muddy river.
  - Ewings creek.
- Gum creek.
- Casey fork.
  - Atchinson's fork.
  - Ray's creek.

Tributaries to Kaskaskia river—
- Nine Mile creek.
- Plumb creek.
- Silver creek.
  - East fork.
- Big Muddy creek.

Tributaries to Kaskaskia river—*Concluded.*
- Elk Horn creek.
- Sugar creek.
- Shoal crek.
- Beaver creek.
  - Flat branch.
- East Fork of Shoal creek.
  - Dry creek.
- Middle fork of Shoal creek.
- West fork of Shoal creek.
- Crooked creek.
- Lost creek.
- Great Point creek.
- Prairie creek.
- Coles creek.
- Gibbs creek.
- East Fork of Kaskaskia river.
  - Bear creek.
  - Hurricane creek.
- Hickory creek.
- Camp creek.
- Booz creek.
- Suck creek.
- Big creek.
- Beck's creek.
- Richland creek.
  - Brush creek.
- Robinson creek.
- Sand creek.
- West Fork Kaskaskia river.
  - Apple creek.
  - Lake Fork.

Tributaries to Illinois river—
- Otter creek.
- Macoupin creek.
  - Taylor creek.
  - Joe's creek.
  - Solomon's creek.
  - Otter creek.
  - Bear creek.
  - Honey creek.
- Apple creek.
- Big Grassy creek.
- Big Sandy creek.
  - Little Sandy creek.
- Walnut slough.
- Bay creek.
- Manvisterre creek.
- McKie's creek.
- Willow creek.
- Indian creek.
  - Prairie creek.
- Crooked creek.
  - Little Missouri creek.
  - Grindstone creek.
    - Carter's creek.
  - Camp creek.
  - Troublesome creek.
  - Panther creek.
  - Bronson's creek.
  - Middle creek.
  - Long creek.
  - North Br. of Crooked creek.
  - Spring creek.

OF THE
UNIVERSITY OF ILLINOIS

PADDLE-FISH,
Polydon spathula (Walbaum.)

Mississippi River and Its Tributaries—Concluded.

Tributaries to Illinois river—*Continued.*

- Sangamon river.
  - Big Panther creek.
  - Clay's creek.
  - Crane creek.
  - Salt river.
    - Prairie creek.
    - Sugar creek.
    - Kickapoo creek.
    - Deer creek.
    - Salt creek.
    - North Br. of Salt creek.
    - Lake Fork Salt creek.
- Rock creek.
- Spring creek.
- Lick creek.
- Sugar creek.
- Brush creek.
- South fork.
  - Bear creek.
  - Flat branch.
- Lake fork.
- Willow creek.
- Goose creek.
- Camp creek.
- Madden creek.
- Stevens creek.
- Otto creek.
- Spoon river.
  - Big creek.
  - Putman creek.
  - Coal creek.
  - Cedar creek.
    - Swan creek.
    - French creek.
    - Sugar creek.
    - Walnut creek.
- Quiver creek.
- Bucklin creek.
- Mackinaw river.
  - Mill creek.
  - Walnut creek.
  - Panther creek.
  - Northwestern branch Mackinaw river.
  - East branch.
  - Six Mile creek.
  - Honey creek.
  - Bray's creek.
  - Henline creek.
- Kickapoo creek.
- Richland creek.
- Crow creek.
  - North branch of Crow creek.
  - South branch of Crow creek.
- Strawn's creek.
- Crow creek.
- Sandy creek.
- Clear creek.
- Big Burian creek.
- West Indian creek.
- Negro creek.
- Vermilion creek.
  - Wolf creek.
  - Otter creek.
  - Scattering Point creek.
  - Rook's creek.
  - South fork Vermilion creek.
  - North fork Vermilion creek.
- Covel creek.
- Fox river.
  - Big Indian creek.
  - Indian creek.
  - Mission creek.

Tributaries to Illinois river—*Concluded.*

- Somonauk creek.
- Battle creek.
- Blackberry creek.
- Fox lake.
- Squaw creek.
- Nippersink lake and creek.
- Nettle creek.
- Waupean creek.
- Mazon river.
  - West fork of Mazon river.
  - East fork of Mazon river.
    - Gooseberry creek.
- Au Sable creek.
  - Saratoga creek.
- Kankakee river.
  - Prairie creek.
  - Forked creek.
  - Rock creek.
  - Iroquois river.
    - Sangamon river.
    - Prairie creek.
    - Spring creek.
    - Sugar creek.
    - Exline slough.
    - Trim creek.
- DuPage river.
  - Little Cache river.
- West Branch of DuPage river.
- Jackson's creek.
- Des Plaines river.
  - Calumet river.
    - Little Calumet river.
  - Salt creek.
  - Mill creek.
- Green river.
  - Mineral creek.
  - Spring creek.
  - Mud creek.
  - Coal creek.
    - Hickory creek.
    - Willow creek.
- Rock creek.
  - Little creek.
- Sugar creek.
  - Spring creek.
  - Elkhorn creek.
- Five Mile creek.
- Three Mile creek.
- Pine creek.
- Clear creek.
- Kite creek.
- Leaf creek.
- Kiswaukee river.
  - Piasa river.
  - Coon creek.
  - Rush creek.
- North branch Kent's creek.
- Pecatonica river.
  - Rock run.
  - Pillow creek.
- Sugar creek.
  - Otter creek.

Tributary to Henderson river—

- Cedar creek.

Tributaries to Edwards river—

- Camp creek.
- East branch.
- West branch.

Tributary to Apple river—

- Irish Hollow creek.

Financial Statement of the Illinois State Fish Commission.

Expenditures by the Illinois State Fish Commissioners for personal expenses, enforcing fish laws, etc., from Oct. 1, 1906, to Sept. 30, 1908, vouchers, etc., on file, in the office of the Auditor of Public Accounts.

APPROPRIATIONS.		
To balance of appropriation Oct. 1, 1906	$8,762 62	
appropriation available July 1, 1907	6,000 00	
appropriation available July 1, 1908	6,000 00	
Total		$20,762 62
EXPENDITURES.		
By expenditures as per vouchers on file for—		
October, 1906	$ 411 99	
November, 1906	623 71	
December, 1906	507 26	
January, 1907	592 50	
February, 1907	588 88	
March, 1907	680 72	
April, 1907	843 05	
May, 1907	796 23	
June, 1907	675 31	
July, 1907	658 83	
August, 1907	847 98	
September, 1907	739 19	
October, 1907	708 83	
November, 1907	681 74	
December, 1907	867 69	
January, 1908	591 47	
February, 1908	720 03	
March, 1908	873 89	
April, 1908	874 53	
May, 1908		
June, 1908	576 12	
July, 1908	1,278 73	
August, 1908	1,251 49	
September, 1908	1,204 58	
Total		17,594 75
Balance of appropriation Oct. 1, 1908		$3,167 87

Expenditures by the Illinois State Fish Commission for Maintenance of the Steamer Illinois from Oct. 1, 1906, to Sept. 30, 1908, vouchers on file in the office of the Auditor of Public Accounts.

APPROPRIATIONS.		
To balance of appropriation Oct. 1, 1906	$3,704 96	
appropriation available July 1, 1907	5,000 00	
appropriation available July 1, 1908	5,000 00	
Total		$13,704 96
EXPENDITURES.		
By expenditures as per vouchers on file for—		
October, 1906	$ 749 62	
November, 1906	622 86	
December, 1906	385 58	
January, 1907	245 10	
February, 1907	261 00	
March, 1907	358 41	
April, 1907	369 99	
September, 1907	865 49	
October, 1907	1,211 72	
November, 1907	501 83	
December, 1907	565 51	
January, 1908	330 00	
February, 1908	280 00	
March, 1908	407 84	
April, 1908	1,257 95	
June, 1908	506 44	
July, 1908	1,391 07	
August, 1908	1,163 85	
September, 1908	1,014 41	
Total		12,488 67
Balance of appropriation Oct. 1, 1908		$1 216 29

Expenditures by Illinois State Fish Commissioners for boiler repairs from Oct. 1, 1906, to Sept. 30, 1908, as per vouchers on file in the office of the Auditor of Public Accounts.

APPROPRIATIONS.		
To balance of appropriation Oct. 1, 1906		$175 53
EXPENDITURES.		
By expenditures as per vouchers on file Oct. 1, 1906	$ 41 73	
expenditures as per vouchers on file April, 1908	120 00	
Total		161 73
Amount lapsed into the State Treasury Sept. 30, 1908		$13 80

Expenditures by the Illinois State Fish Commission for general expenses collecting and distributing fish, etc. from Oct. 1, 1906, to Sept. 30, 1908, vouchers on file in the office of the Auditor of Public Accounts.

APPROPRIATIONS.		
To balance of appropriation, Oct. 1, 1906	$11,162 81	
appropriation available July 1, 1907	6,000 00	
appropriation available July 1, 1908	6,000 00	
Total		$23,162 81
EXPENDITURES.		
By expenditures as per vouchers on file for—		
October, 1906	$ 153 06	
November, 1906	186 01	
December, 1906	194 31	
January, 1907	255 55	
February, 1907	200 19	
March, 1907	814 09	
April, 1907	1,133 47	
May, 1907	1,202 58	
June, 1907	1,675 58	
July, 1907	1,805 29	
August, 1907	1,278 41	
September, 1907	698 44	
October, 1907	353 59	
November, 1907	438 90	
December, 1907	237 48	
January, 1908	459 97	
February, 1908	134 09	
March, 1908	141 52	
April, 1908	247 19	
May, 1908	2,744 54	
June, 1908	2,160 13	
July, 1908	200 82	
August, 1908	274 88	
September, 1908	144 40	
Total		17,164 44
Balance of appropriation, Oct. 1, 1908		$5,998 37

FISH PROTECTION FUND.

Expenditures by the Illinois State Fish Commission from the Fish Protection Fund from Oct. 1, 1906, to Sept 30, 1908, as per vouchers on file in the office of the Auditor of Public Accounts.

To balance in fish protective fund. Oct. 1,1906	$ 1,279 46	
amount received from Oct. 1,1906, to Sept. 30,1908	12,487 96	
Total		$13,767 42
EXPENDITURES.		
By expenditures as per vouchers on file for—		
October,1906	$ 74 70	
November,1906	20 00	
December,1906	155 00	
January,1907	50 00	
February,1907	50 00	
April,1907	121 50	
May,1907	25 00	
June,2907	310 90	
July,1907	247 50	
August, 1907	150 00	
September,1907	178 50	
October,1907	289 50	
November,1907	150 00	
December,1907	150 00	
January,1908	162 50	
February, 1908	172 50	
March,1908	403 35	
April,1908	1,072 99	
May,1908	725 70	
June,1908	452 66	
July,1908	620 78	
August, 1908	649 81	
September,1998	864 85	
Total		7,107 74
Balance in fund, Oct. 1,1908		$6,659 68
RECAPITULATION.		
Total appropriations for—		
personal expenses	$20,726 62	
boat expenses	13,704 96	
repairs expenses	175 53	
general expenses	23,162 81	
received fish protection fund	13,767 42	
		$71,573 34
EXPENDITURES.		
By expenditures on account of—		
personal expenses	$17,594 75	
boat expenses	12,488 67	
repair expenses	175 53	
general expenses	17,164 44	
fish protection fund	7,107 74	
		54,531 13
Balance in all funds		$17,042 21

LOG OF STEAMER ILLINOIS.

April 7, 1908—Left Quincy Bay and stopped at levee for coal. Laid in Quincy Bay until April 10, getting ready for season's work.

April 10—Left Quincy Bay at 9:13 a. m.; touched at Hannibal at 11:45; let Dr. Bartlett off; left at 11:46; stopped above Winneberg at 6:10; laid up for night. Run 105 miles.

April 11, 1908—Left at 6:05 a. m.; went into Illinois River at 6:50; stopped at Meredosia at 2:45 p. m.; left at 3:25 p. m.; stopped at Beardstown at 5:10 p. m.; laid up. Run 105 miles.

April 12—Left Beardstown at 6:15 a. m.; stopped at Meredosia at 7:37. Run 20 miles. Laying at Meredosia.

April 15—Left Meredosia at 6:15 a. m.; stopped at Beardstown at 7:55. F. A. Whitman joined us. Run 20 miles.

April 16—Left Beardstown at 6:35 a. m.; Gov. Deneen on board. Stopped at Meredosia at 8:10 a. m., letting Gov. Deneen off at depot. Wept up to landing at 8:15. Laid up. Run 20 miles.

April 16—Left Meredosia at 6:05 a. m.; stopped at Beardstown at 7:45; took supplies; left at 8:05; stopped at Browning at 9:00; left at 9:15; Bath 10:40; left at 11:03; stopped at Havana at 12:03. Miles, 49.

April 18—Left Havana at 8:28 a. m.; stopped at Lancaster at 11:00; took coal; left at 1:10 p. m.; stopped at Pekin at 2:00; left at 2:52; stopped at Peoria at 3:55. Run 43 miles.

Laid up Sunday, April 19.

April 20—Left Peoria at 6:38 a. m.; stopped at Spring Bay at 7:40; left at 7:55; Chillicothe at 8:35; left 9:15; Lacon, 10:05; left at 10:35; Henry 11:15; left at 11:55; Hennepin 1:03 p. m.; left at 1:45 took Warden Sturdeman on at Hennepin; Dephue at 2:18; left at 2:38; Spring Valley at 3:35; left at 5:00; stopped at Peru 5:25. Run 59 miles.

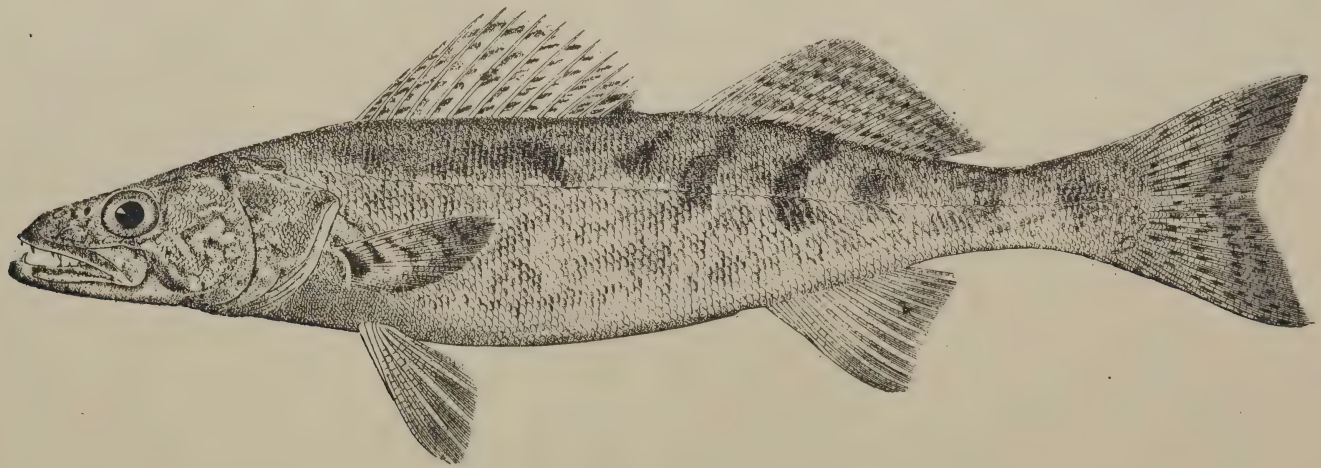
April 21—Left Peru at 8:30 a. m.; down river enforcing law; stopped at Hennepin; let Warden Sturdeman off at 9:50; left at 9:51; stopped at slough below Hennepjin at 10:00; took nets; left at 4:10; stopped at Mackwin Slough at 4:50. Warden F. A. Whitman in charge of enforcing laws. Run 30 miles.

April 22—Left Mackwin Slough at 6:15 a. m.; stopped at Hennepin at 7:10 to put off nets; Warden Sturdeman in charge; left at 7:40 stopping at intervals, Wardens Whitman and Nolden patrolling back water and lakes with the tender launch, Maud; stopped at Chillicothe at 10:55; left at 11:30, stopping at intervals patrolling lakes and back water; stopped at Peoria at 5:50. Run 51 miles.

April 23—Left Peoria at 12:00 noon; stopped at Pekin at 12:50 p. m. Run 10 miles.

April 24—Left Pekin at 1:30; stopped at Kingston's Mines at 2:35. Laid up by very high winds. Run 7 miles.

April 25—Wind bound. Left Kingston's Mines at 4:00 p. m.; stopped at Canton Landing at 4:30, patrolling; left at 5:30; stopped at Spring Lake Canal at 5:55. Run 10 miles.



THE WALL-EYED PIKE OR DORY.

Stizostedium vitreum (Mitch.), Jordan & Copeland. (p. 421.)

April 26—Left Spring Lake Canal at 7:10 a. m.; Wardens Whitman and Nolden patrolling lake with launch, Maud; stopped at foot of Duck or Senate Island; arrived at Havana 9:15. Mr. Whitman called home on account of serious illness of his father. Run 22 miles.

April 27-28—Awaiting return of Mr. Whitman.

April 29—Left Havana at 6:45 a. m.; stopped at and patrolled Otter Creek, Anderson Slough, Snicarte Slough, Steward Lake, Hickory Slough, and Upper Sangamon Bay; stopped at Browning at 1:20; left at 4:43; stopped at Beardstown at 5:25. Laid up. Run 32 miles.

April 30—Left Beardstown at 10:18 a. m.; stopped at Crooked Creek at 10:42; left at 12:20 p. m.; stopped at Mill Slough, 12:35 p. m.; left at 2:15; stopped at Perkins Lake at 2:35; left at 3:05; stopped at Kamp Creek at 3:20; left at 4:20; took one net; stopped at Meredosia at 4:40. Run 17 miles.

May 1—Left Meredosia at 6:50 a. m.; turned above Florence at 8:05; stopped above Valley City at 8:45; left at 9:40; stopped at Morenstar at 9:50; left at 10:15; stopped at Naples at 10:40; left at 12:53; stopped at McGee's Creek at 1:00; left at 1:55; stopped at Meredosia at 2:30. Run 30 miles.

May 2—Spent Sunday at Meredosia.

May 4—Left Meredosia at 6:30 a. m.; stopped at Beardstown at 8:20; left at 8:45; stopped at Havana at 12:10. Run 49 miles.

May 6—Left Cook and Cabin Boy Griffin, quit; left Havana at 7:55; stopped at Pekin 11:25; laid up. Run 33 miles.

May 7—Left Pekin at 12:30 p. m.; stopped at Peoria at 1:33; put new piano on board, also giving first selection on new instrument. Run 10 miles.

May 8—Left Peoria at 9:25 a. m.; stopped at Pekin 9:10. Run 10 miles.

May 9—Left Pekin at 7:00 a. m.; stopped at Kingston's Mines at 7:40; took coal; left at 9:40; stopped at Havana at 11:55; laid up. Run 33 miles.

May 10—Spent Sunday at Havana.

May 12—Left Havana at 6:50 a. m. Capt. Wm. Caldwell, O. H. Harpham and Mr. Hitchcock on board; stopped at Beardstown at 9:20; took on supplies; left at 12:35; stopped at Meredosia at 1:43. Run 49 miles.

May 13—Left Meredosia at 6:35 a. m.; stopped at Pearl at 8:50; left at 10.11; stopped at Kampsville at 11:05; left at 12:35; stopped at Hardin at 1:25; left at 1:53; stopped at Macoupin Creek at 2:08; left at 2:40; stopped at Grafton 4:10. Run 71 miles.

May 14—Left Grafton at 6:30; stopped at Elsah at 6:50; left at 7:20; stopped at Squaw Island at 8:10; took nets; left at 9:42; passed David Tipton lying at Turner's Landing, 12:35; passed the Kabe Kona at 1:45, at Hamburg under way; stopped at Bay City in Hamburg Bay; took seine at 2:20; left at 2:35, up bay; turned at head of bay at 2:50; went out of bay at 3:20; stopped at Clarksville at 4:45. Laid up. Run 70 miles.

May 15—Left Clarksville at 6:22 a. m., stopping at intervals looking for violations; stopped at Murphy's Bay at 9:20; left at 10:35, stopping at intervals patrolling cut-offs and sloughs; stopped in Quincy Bay at 4:50. Run 60 miles.

May 17—Left Quincy at 8:30 a. m.; stopped at levee at 8:40. Run 1 mile.

May 19—Left Quincy at 2:05 with G. A. R. people; returned to Quincy at 2:50. Run 12 miles.

May 19-20-21—Laying at Quincy to take G. A. R. outing. Nothing doing.

May 22—Left Quincy Bay at 6:28; got boat in warehouse; left at 6:45; stopped at Canton at 8:45; left at 10:55; stopped at Lyford's Landing at 11:55; left at 12:30; stopped below Warsaw at 1:52; left at 2:20; stopped at Keokuk at 2:45; left at 3:33; stopped at lower lock at 3:38; left at 3:55; stopped at M. lock at 4:15; Gard lock 5:15; Fort Madison, 7:02. Run 73 miles.

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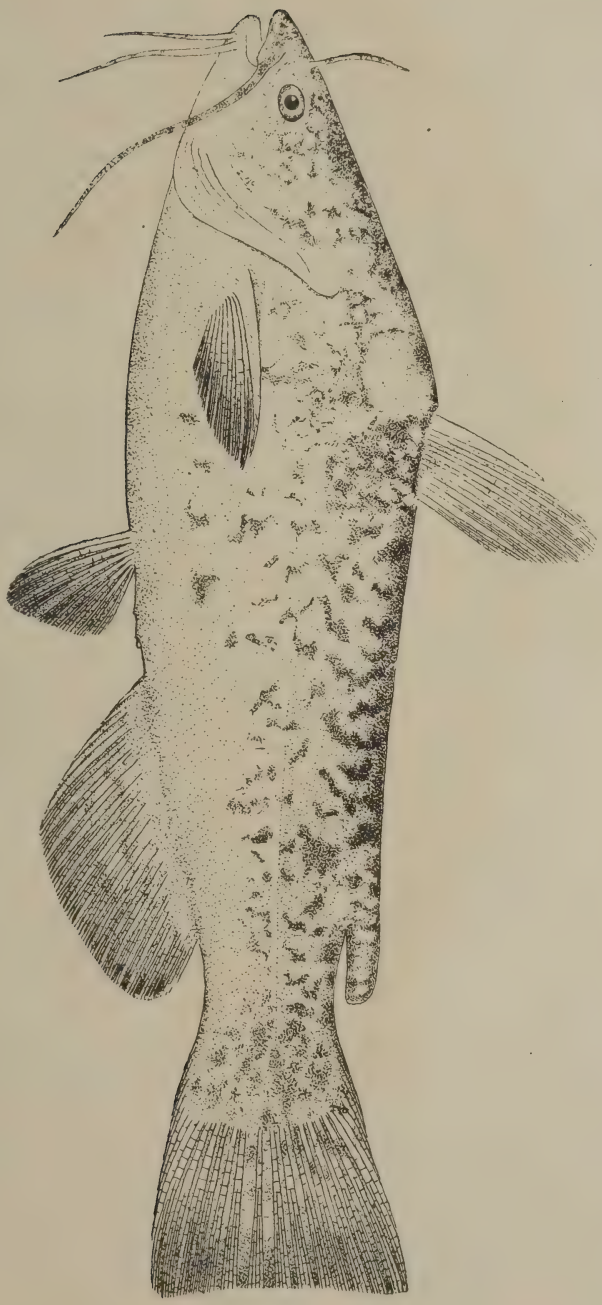
SMALL-MOUTH BUFFALO,
Ictiobus bubalus (Rafinesque.)



THE BULL-HEAD OR CATFISH.

Amiurus catus (L.), Gill.

May 23—Left Fort Madison at 6:35; Pontusic, 7:28; Dallas City, 8:17; Henderson River, 11:00; Oquoroka, 1:20; Keithsburg, 3:30; New Boston, 4:10. Run 51 miles.

May 24—Left New Boston at 6:35; Muscatine Island, 9:40; patrolling sloughs; Antalucia, 1:10; Rock Island, 2:20. Run 49 miles.

May 25—Left Rock Island at 7:30 a. m.; Burlington, 2:50; Nauvoo, 5:10. Run 107 miles.

May 26—Left Nauvoo at 6:50; Keokuk, 9:25; Quincy 12:35. Run 52 miles.

May 28—Left Quincy at 6:25; Hamburg Bay, 11:40; Illinois River 3:10; took up nets; left at 4:15; stopped at Hardin, 6:20. Run 141 miles.

May 29—Left Hardin at 4:50; Meredosia 1:10; Beardstown 3:05; stopped at intervals taking nets; Havana, 6:40. Run 99 miles.

June 3—Left Havana at 5:45, Williams party on board; Pekin, 8:50; Kingston's Mines, 11:38; took coal; Havana, 3:40; Beardstown, 6:33. Run 115 miles.

June 4—Left Meredosia at 9:55; Beardstown, 1:25; Havana 4:23. Run 49 miles.

June 7—Left Havana at 6:18 a. m., with Whipple party; Kingston's mines 8:40; took coal; Pekin 11:43; Meredosia, 6:08. Run 115 miles.

June 9—Left Meredosia at 9:33; Havana 2:40. Run 49 miles.

June 10—Left Havana 5:00 a. m.; Kingston's Mines, 7:25 took coal; Pekin 12:20; opposite Pekin 12:25; crew fishing drainage district. Run 33 miles.

June 11—Left opposite Pekin at 7:30. Crew taking fish out of drainage district. Run 6 miles.

June 12—Left opposite Pekin at 3:50 p. m., with 22,000 fish on board, taken from drainage district. Arrived Havana hatchery at 6:35. Run 33 miles.

June 13—Left Havana at 8:20 a. m.; Kingston's Mines at 10:45; took coal; Pekin, 1:05; Havana, 3:00. Run 66 miles.

June 14—Left Havana at 8:10 a. m.; Pekin 11:25; Chillicothe 2:05; Pekin 4:56; opposite Pekin 8:00. Run 89 miles.

June 19—Left Pekin 4:28; 6,600 fish on board; Havana Hatchery, 7:08. Run 33 miles.

June 21—Left Havana at 2:05; Pekin 5:10. Run 33 miles.

June 22—Crew taking fish from drainage district; put in river, 118,000 fish.

June 23—336,000 fish given liberty.

June 24—323,000 fish given liberty.

June 25—406,000 fish put back in river.

June 20—Kept on board for propagation 59,000 cat, 250 bass, 100 bream. Put in river 224,000 fish.

June 27—Left opposite Pekin at 7:10; Dead Lake 7:45; Kingston's Mines 8:20; took coal, left 12:15; Havana Hatchery, 2:20; unloaded fish. Run 33 miles.

June 26—Left Havana at 2:00 p. m.; opposite Pekin, 5:20; Pekin 5:30. Run 33 miles.

June 30—Crew fishing Dead Lake. Took 54 bass and 174 bream.

July 1—Crew fishing Dead Lake. Took 57 bass, 759 bream on board.

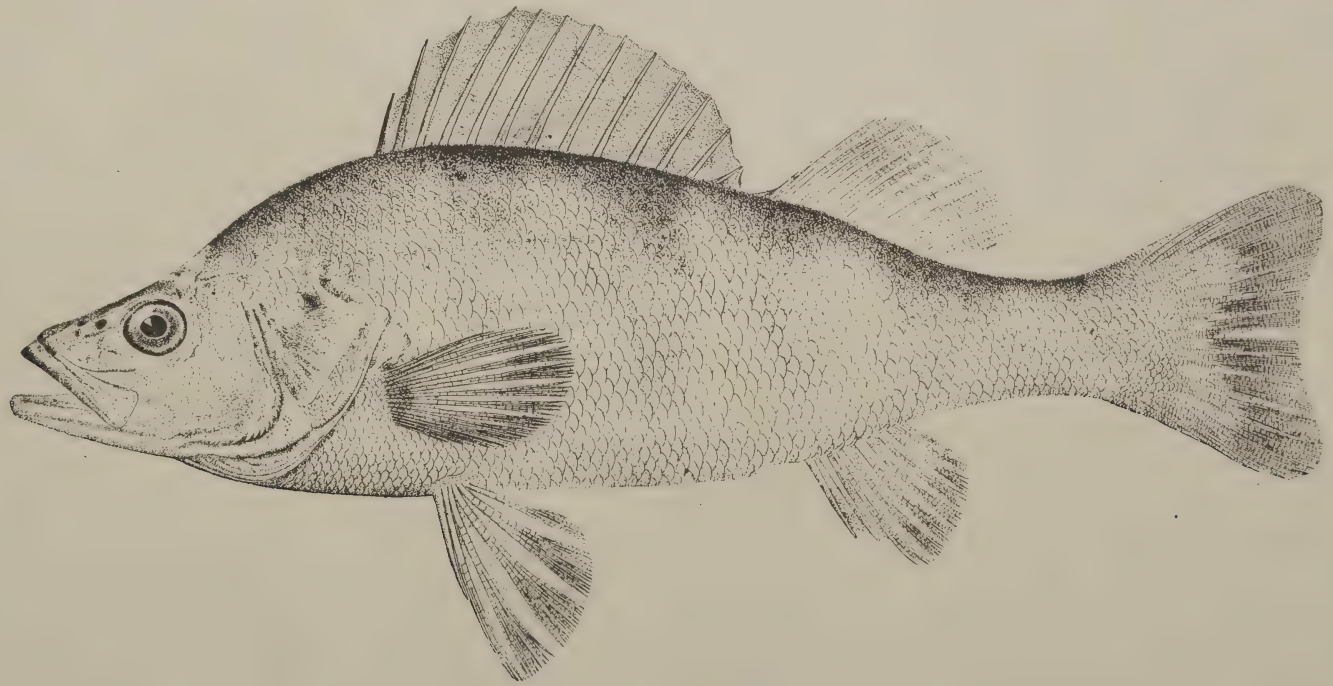
July 2—Fishing Lamarsh drainage district; put 329,000 fish at liberty in river; took 62 bass on board.

July 3—Left Pekin at 9:30; fire drill 9:45; Havana Hatchery, 12:20; delivered 195 bass, 900 bream. Run 33 miles.

July 4—Left Havana at 10:20; Kingston's Mines 12:50; took coal; left 3:05; Havana, 5:15. Run 52 miles.

July 5—Left Havana at 6:10; Spoon river, 10:15; Havana 1:50; Meredosia, 5:50. Run 55 miles.

July 6—Left Meredosia at 8:40 a. m.; East St. Louis, 5:00 p. m.; St. Louis 6:55. Run 112 miles.



THE YELLOW PERCH.

Perca americana, Schrank. (p. 414.)

July 7—Left St. Louis at 12:35; Chester 4:50. Run 80 miles.

July 8—Left Chester at 12:15; Cape Girardeau 5:30; Cairo 8:30. Run 110 miles.

July 9—Left Cairo at 8:00 a. m.; Paducah, 2:20; Golconda 5:25. Run 76 miles.

July 10—Left Golconda at 5:05; Cave-In-Rock, 7:45; Shawneetown, 10:10; left 3:50; went into Wabash River at 5:00; Decker's Landing 7:55. Run 67 miles.

July 11—Left Decker's Landing at 5:15; mouth of Little Wabash, 6:15; went out of Wabash at 11:15; Mt. Vernon, 1:20; Shawneetown, 4:30. Run 71 miles.

July 12—Left Shawneetown at 6:00 a. m.; Paducah 12:00 m. Run 72 miles.

July 13—Left Paducah at 4:15; went out of Ohio River at 7:50; Grand Tower, 4:40; took coal; left at 5:53; Chester 9:30. Run 156 miles.

July 14—Left Chester 4:25 a. m.; St. Louis, 12:50; left 3:35; Grafton 8:05. Run 116 miles.

July 15—Left Grafton at 6:20 a. m.; Meredosia, 3:00; La Grange Lock, 3:37; Havana 8:00. Run 120 miles.

Left Havana at 5:00; Kingston's Mines, 7:35, took coal; left 9:00; Pekin 10:35; Peoria, 11:38. Run 43 miles.

July 17—Left Peoria at 7:30; Pekin 8:25; Havana, 11:04. Run 43 miles.

July 18—Left Havana at 10:50 a. m.; Spoon River, 11:00; Kingston's Mines, 4:28; Pekin, 6:13; Peoria, 7:15. Run 43 miles.

July 19—Washed boilers.

July 20—Left Peoria, 6:40; Havana, 12:43; LaGrange, 4:00; LaGrange Lock, 4:40; Meredosia, 5:10. Run 92 miles.

July 21—Crew collecting fish.

July 22—Left Meredosia at 4:25; above Kampsville, 7:35; Naples, 12:30; Smith's Lake, 1:25; Meredosia, 1:55. Run 78 miles.

July 26—Left Havana at 6:50; Kingston's Mines, 9:30; Havana 1:55. Run 52 miles.

July 27—Left Havana at 4:22; LaGrange, 8:05; Meredosia, 8:40. Run 49 miles.

July 30—Left Meredosia at 10:55, with 2,500 bass, and other fish; La Grange Lock, 12:15; Beardstown, 2:45; Havana, 6:05. Run 49 miles.

July 31—Left Hatchery at 8:10; Havana Landing, 8:17; Pekin 12:15; left at 3:17 with 10,000 cat fish on board; Kingston's Mines 5:37; Havana, 7:50; delivered fish to Hatchery. Run 66 miles.

Aug. 5—Left Havana at 9:50; Beardstown, 12:30. Run 32 miles.

Aug. 6—Left Beardstown at 9:40; Havana, 10:05.

Aug. 10—Left Havana at 3:55; LaGrange Lock, 7:50; Meredosia, 8:20. Run 49 miles.

Aug. 12—Left Meredosia at 12:30; LaGrange Lock, 1:30; Havana Hatchery, 6:05; delivered 3,000 fish. Run 49 miles.

Aug. 13—Left Havana at 3:10; Kingston's Mines, 6:45; Pekin 7:40; Elfresco Park, 9:30. Run 50 miles.

Aug. 14—Left Elfresco at 6:05; Pekin, 8:30; Kingston's Mines, 12:15; Havana, 2:30; Hatchery, 3:45; Beardstown, 6:45. Run 82 miles.

Aug. 15—Left Beardstown at 6:40; LaGrange, 7:48; Meredosia, 8:27; below Meredosia 11:25; Naples 12:00; Kampsville Lock, 3:45; Grafton 6:30; Chautauqua, 7:25. Run 91 miles.

Aug. 16—Left Chautauqua at 7:55; Portage, 8:10; Kampsville Locks, 12:55; Naples, 7:10; Meredosia, 8:55. Run 74 miles.

Aug. 19—Left Meredosia at 11:10, with 1,800 bass; LaGrange Lock, 12:18; Beardstown, 1:37; Havana, 5:10. Run 49 miles.

Aug. 20—Left Havana Hatchery at 6:04; Clear Lake, 9:35; Lancaster, 1:35; Clear Lake, 2:45; Havana Hatchery 3:52; Matanzas, 4:50; LaGrange Lock 8:27; Meredosia, 9:05. Run 101 miles.

Aug. 21—Left Meredosia at 5:18 a. m.; Valley City, 6:15; Bartholomews, 9:00; Kampsville Lock, 9:28; St. Louis, 2:53; East St. Louis, 4:43. Run 112 miles.

Aug. 22—Left East St. Louis at 5:15; Kampsville Lock, 12:55; Bartholomews, 1:10; Meredosia, 5:50. Run 112 miles.

Aug. 27—Left Meredosia at 6:25 a. m.; LaGrange Lock, 7:40; opposite Hickory Island, 10:08; Steward Lake, 10:20; Sharps, 11:50; Havana, 4:25; delivered 4,000 fish. Run 49 miles.

Aug. 28—Left Havana at 6:27; Copperas Creek Lock, 8:40; opposite Pekin, 10:32; took 10,000 cat fish from drainage district; Lancaster mines, 3:10; Coon Island, 5:17. Run 49 miles.

Aug. 29—Left foot Coon Island, 9:50 a. m.; Kelsey's Lake, 10:05; Copperas Creek Lock, 10:45; Clear Lake, 11:50; tried for fish; Beebe Slough, 11:58; tried for fish; Havana Hatchery, 1:50. Unloaded 10,000 cat fish, 900 bass, 72 bream. Run 20 miles.

Sept. 1—Left Havana at 6:20; Copperas Creek, 8:30; Pekin, 10:20; Peoria, 1:22. Run 43 miles.

Sept. 2—Left Peoria at 9:32; Henry Lock, 1:00 p. m.; Hennepin, 2:48; Peru, 4:30. Run 61 miles.

Sept. 3—Left Peru at 7:25 a. m.; Spring Valley, 7:55; Henry Lock, 2:20; Chillicothe, 4:10. Run 42 miles.

Sept. 4—Left Chillicothe at 6:25; Peoria, 1:55; Pekin, 4:00; Lancaster Coal Dock, 7:35; foot Coon Island, 7:50. Run 40 miles.

Sept. 5—Left foot Coon Island at 6:25; Copperas Creek Lock, 7:08; Havana, 12:30; Hatchery, 12:40; head Hickory Island, 3:55. Run 45 miles.

Sept. 6—Left head Hickory Island at 2:08; Browning, 2:30; Havana 6:18. Run 28 miles.

Sept. 8—Left Havana at 6:25 a. m.; Bath, 7:15; Browning, 10:25; Frederick, 11:33; Beardstown, 11:50; LaGrange Lock, 4:02; Meredosia, 4:40. Run 49 miles.

Sept. 9—Left Meredosia at 6:35; Naples, 7:25; Griggsville, 8:05; Bedford, 9:41; Pearl, 11:10; Kampsville, 1:05; Hardin, 2:50; foot Twelve Mile Island, 3:50; Grafton, 4:55. Run 71 miles.

Sept 10—Left Grafton at 7:27 a. m.; Kampsville Lock, 11:55; Beardstown, 8:30; took seine from Chas. Cole, Browning, 9:40; Havana, 12:43. Run 120 miles.

Sept. 13—Left Havana at 6:35; Copperas Creek Lock, 8:47; Lancaster Coal Dock, 12:45; Peoria, 3:00. Run 43 miles.

Sept. 15—Left Peoria, 8:10; Pekin, 10:00; Copperas Creek Lock, 11:50; Havana, 1:27; left, 5:00; Hatchery, 5:22; Havana, 5:30. Run 43 miles.

Sept. 16—Left Havana at 6:00; Copperas Creek Lock, 8:10; Peoria, 11:18. Run 43 miles.

Sept. 17—Left Peoria at 7:17; Chillicothe, 9:15; Henry, 12:50; Chillicothe, 2:10; Peoria, 4:05. Run 34 miles.

Sept. 18—Left Peoria at 8:37; Pekin, 10:40; Kingston's Mines, 12:35; Caper's Creek, 1:53; Havana Hatchery, 3:00. Run 43 miles.

Sept. 22—Left Meredosia at 2:30 p. m.; LaGrange Locks, 3:30; Sugar Creek Lake, 5:30. Run 23 miles.

Sept. 23—Left Sugar Creek Lake at 10:45, with 2,000 fish aboard; Sharp's Landing, 2:50; Home's Landing, 3:35; Bell Lake, 4:10; Havana Hatchery, 5:10; delivered 3,000 fish; Havana Landing, 6:14. Run 26 miles.

Sept. 24—Left Havana at 7:13 a. m.; Copperas Creek Lock, 9:20; Murry Lake, 9:50; Kingston's Mines, 12:10; Murray Lake, 2:00; Pekin, 4:27; Peoria, 5:40. Run 55 miles.

Left Peoria at 9:00 a. m.; Murray Lake, 11:50; Copperas Creek Lock, 12:30; Havana Hatchery, 2:30; LaGrange Lock, 6:40; Meredosia, 7:18. Run 92 miles.

Sept. 26—Left Meredosia at 5:05 a. m.; Kampsville Lock, 9:20; St. Louis 3:50. Run 112 miles.

Sept. 27—Left St. Louis at 6:30; Grafton, 11:10; Hardin, 2:13; Kampsville Lock, 3:45; Montezuma, 6:08. Run 91 miles.

Sept. 28—Left Montezuma at 6:25 a. m.; Meredosia, 9:00; left at 4:15 p. m.; La Grange Lock at 5:22; Beardstown, 6:30. Run 38 miles.

Sept. 29—Left Beardstown at 5:30; Havana, 9:03. Run 32 miles.

Sept. 30—Left Havana at 5:15 a. m.; Bell Lake, 9:15; Anderson Lake Slough, 11:25; Idlewild, 11:35; Anderson Slough, 1:50. Run 14 miles.

Oct. 1—Left below Anderson Slough at 10:30, with 4,000 fish; Havana Hatchery at 11:53; delivered fish. Run 14 miles.

Oct. 7—Left Havana Hatchery at 12:40; Butler's Landing, 1:50, collecting fish. Run 13 miles.

Oct. 8—Left Butler's Landing at 7:10 a. m.; Anderson's Lake, 9:40; Idlewild, 12:43; Anderson Slough, 4:20, with 3,000 fish; Havana Hatchery, 5:40. Run 13 miles.

Oct. 9—Left Havana Hatchery at 5:50 a. m.; Butler's Landing, 7:00; Razor Back Lake, 7:50; Snicarte Slough, 9:20; Sugar Creek Lake, 11:40. Run 32 miles.

Oct. 10—Left Sugar Creek Lake, 11:55, with 4,000 fish aboard; Butler's Landing, 1:25; Havana Hatchery, 2:55. Run 26 miles.

Oct. 12—Left Havana Hatchery at 9:50 a. m.; Idlewild, 11:00; Beardstown, 1:50; LaGrange Lock, 4:30; Meredosia, 5:05. Run 49 miles.

Oct. 14—Left Meredosia at 6:20; LaGrange Lock, 7:10; Crooked Creek, 4:10; Coal Creek, 4:25; Sugar Creek, 5:50. Run 23 miles.

Oct. 15—Left Sugar Creek Lake at 9:40; Ice House Pond, 9:55; Boyd's Lake, 11:55; Idlewild, 2:55; Havana Hatchery, 4:20, with 5,300 fish. Run 26 miles.

Oct. 16—Left Havana Hatchery at 6:28 a. m.; Copperas Creek Lock, 8:45; Kingston's Mines, 9:40; Copperas Creek, 4:40; stopped opposite lock, 5:00. Run 35 miles.

Oct. 17—Left opposite lock at 7:45 a. m.; Havana Hatchery, 4:55, with 1.070 bass, 1,200 bream, 2,300 crappie; delivered same to Hatchery. Run 17 miles.

Oct. 19—Left Havana Hatchery at 12:25 p. m.; Jack Lake, 1:35. Run 13 miles.

Oct. 20—Left Jack Lake at 6:40 a. m.; Hickory Island, 7:40; Beardstown, 3:40; LaGrange Locks, 5:10; Meredosia, 5:45. Run 36 miles.

Oct. 2—Left Meredosia at 7:15 a. m.; LaGrange Lock, 8:15; Beardstown, 9:33; Havana Hatchery, 2:45. Run 49 miles.

Oct. 24—Left Havana at 7:15; Copperas Creek, 9:10; Kingston's Mines, 10:20; Peoria, 2:30. Run 43 miles.

Oct. 25—Left Peoria at 8:23; Copperas Creek Lock, 11:00; Havana Hatchery, 2:10; Liverpool, 4:00; Havana Hatchery, 4:50. Last trip of season. Boat laid up until after election.

Nov. 11—Boat laid up for winter at Havana.

WARDENS' REPORTS.

REPORT OF A. SITES, FISH WARDEN, FROM NOVEMBER 10, 1906.

Went to Kankakee to investigate the fish way in the dam at Kankakee. I found that there was a fish way in the dam but the water was so high that I could not see enough of it to make a fair report. The people living around there told me there was a good fish way.

Oct. 20—Went to Effingham and tried the case of W. Z. Norris before the circuit court but the jury acquitted him. The case of W. Z. Norris was one that was tried before Justice Jones in Effingham on September 9, 1905, and was appealed to the circuit court.

Oct. 27—Went to Decatur to watch the shipments at the express office. I found a shipment from Union City, Tenn., by J. C. Burdick to the Decatur Fish Market at Decatur. They were not billed according to law. It did not state on the address side of the package that it contained fish nor the nature of the fish. I confiscated the fish and gave them to the Wabash hospital at Decatur and I have their receipt for them. The package contained 54 pounds of black bass and crappie.

Nov. 17—Five arrests; two convictions; 3 discharged. Went to Charleston and tried five for illegal fishing in the Embarras River near Charleston. I succeeded in convicting two, William Bell and John Griffin, who were fined $25.00 each. The other three were acquited. These cases were tried before G. A. Bamblaser, J. P., at Charleston.

Dec. 8—Seized about 858 pounds of undersized fish from St. Clair Fish Market, East St. Louis and Henry Vogt Market. Shipment made by Henry Lem. Followed the express wagon to St. Clair Fish Market where they put off two barrels of mixed fish not billed according to law which I seized. Confiscated all of above fish and turned them over to the overseer of the poor and the Salvation Army.

Dec. 22—Five hundred and forty pounds undersized fish disposed of. At the St. Clair Fish Market and at May's Market confiscated 540 pounds of undersized crappies and striped bass. Two barrels that I found at May's had the tags removed and I could not tell who shipped them. The fish that I took at the St. Clair market were shipped by Truman & Whitehead at Liverpool and a part of two billings were from the Havana Fishing Co. I turned the above fish over to the Salvation Army and the poor master at East St. Louis.

Feb. 16, 1907—Confiscated 50 pounds undersized fish at St. Clair market in East St. Louis. They were striped bass and buffalo. Turned over same to poor master. Also seized one 50 foot seine on Salt Fork river near Homer which I turned over to Sheriff Peters of Champaign county.

Feb. 23, 1907—Confiscated at Bloomington 50 pounds No. 2 lake trout shipped by Thomas O'Hearn & Co., of Chicago to Hobbs & Beam at Bloomington. Donated fish to the St. Joseph hospital at Bloomington.

March 9—At American Express office in Decatur, I found a shipment of fish by Henry Lemme at Pekin to Barbry & Cooper at Decatur, marked black bass and crappies. Opened them and found they contained crappies, black bass, striped bass and pickerel. Found 11½ pounds undersized black bass, crappies and pickerel which I turned over to Wabash hospital.

March 30—At Decatur found a box of crappies shipped by Havana Fishing Co. to P. N. Howard at Decatur. Confiscated same. At Bloomington confiscated shipment of small crappies and sunfish shipped by Henry Lemme to Mandel & Schwarzman.

April 13—Section 1 violated. Joe Smith, Leople Ketch & Lewis Lawrence. Justice of Peace, Lewis Zerwick, St. Clair Co., Lebanon. Guilty. Fines assessed, $25 and costs. Fines collected, $75.00. Amount sent to State Treasurer, $75.00. Undersized fish disposed of, about 250.

April 27—Name of defendants, Joseph Johnson, Wm. Haines, John Scott, Ed. Ingle of Chrisman, Edgar county. Section 1 violated. Judge, J. A. Patterson, Paris. Defendants bound over to June term of court.

May 11—Defendant John Speechley, St. Joseph, Champaign county. Section 1 violated. Judge, Rogerson, P. M. Champaign. Decision, not guilty.

May 25—Destroyed 7 fish baskets from Grayville, Mill Shoals, Golden Gate.

June 15—Defendants, Wm. Lewis, Sam Gash, Mat Medler, Rus. Leet, Dan Pane and R. C. Miller of Fairfield, Wayne county. Judge, Jacob Beamer, J. P., Fairfield. Decision, guilty for Miller. Other cases continued. Amount of fine, $25 and costs. Defendant given 30 days in which to pay fine by giving security. Balance of cases continued until June 26.

June 29—Went to Fairfield and tried three at that place for violations of the fish laws by netting in the Little Wabash and Elm rivers. Then went to Shelbyville and tried three at that place for seining. Con Fox, the party who made the complaint, from Strasburg, took too active a part in the case. He hired an attorney to assist the state's attorney and talked too much. It was shown on the witness stand that the parties had had trouble before and were enemies. Case was a good one but Fox showed too plainly his feeling against the defendants, and that he wanted them convicted. For this reason the jury decided against the State.

July 13—Defendants, Roy Grupe and Rev. V. C. White of Watson, Effingham county. Judge, G. F. Taylor, J. P., Effingham. Decision, guilty. Amount of fine, $25 and costs, each. Fines collected $25 on July 10. Amount of fine sent to State Treasurer, $50.00. Fined for catching fish in the back waters of the Little Wabash river with their hands.

July 27—Went to Champaign and took eight lake trout that only weighed 4½ pounds from Mrs. D. Roe, keeper of the restaurant in the Champaign hotel. They had had more but had used them before I got there.

Aug. 3—Stopped at Decatur and at the express office at the Wabash depot took 39 lake trout that together weighed but 20 pounds. They were shipped by A. C. Booth & Co., of Chicago, to Godsell & Lowry at Philo, Ill.

Aug. 17—Went along the Kankakee river from about 7 miles above Momence from the club house to Kankakee. I took and destroyed 9 trammel nets, 1 seine and 12 hoop nets.

Sept. 17—Went to Mattoon and inspected the shipments at the express offices and found and confiscated 42 pounds of black bass shipped by L. A. Everist & Co., of Havana, to Jas. Sowers at Indianapolis, Ind. Donated the fish to the Odd Fellows Old Folks' Home at Mattoon, for which I enclose receipt.

Sept. 21—On my rounds of the express offices at Decatur in examining shipments of fish I found a barrel of mixed dressed fish, buffalo and carp. There were a great many that only measured 9 to 9½ inches. The barrel was shipped by N. S. Bushnell & Co., at Meredosia, to A. Booth at St. Louis, Mo., Sept. 19.

October 26—Two hoop nets and one seine taken. Went along the Kankakee river from Kankakee to Momence. Found two hoop nets and one sein above

WINDING IN THE HAUL.

the ice house above Waldron that I destroyed. Found no violations in operation. Learned that the parties who had been violating the fish laws have quit fishing and gone to husking corn. Will go to Sullivan next week if it don't rain and raise the river so that we can not work on the dams.

November 2—I took four men to the Okaw river near Charleston as per orders from President Nat H. Cohen and took out and destroyed three fish dams and five fish traps. We piled them up and destroyed everything that could be burned. There was about a ton of buggy axles and gas pipe driven into one of them. We pulled them out and threw them into the deepest water we could find. It took us three days to complete the job.

November 9—Defendant, N. E. McMichael, of Pittsburg Lake, St. Clair county. Judge, P. Williams, J. P., East St. Louis. Guilty. Amount of fine, $25.00 and costs ($9.85). Fine paid to the J. P.

From there we went to Belleville, the county seat of St. Clair county, and made complaint against one Frank Paynor for trammel netting in Pittsburg Lake. This act was committed in June, 1907, under the old law. The State's attorney stayed the case until he could investigate the law. He said it was a question in his mind whether we could prosecute under the old law as it had been repealed. He is to write to me when he is satisfied.

I then went to Winchester and met Deputy Warden Henry Tankersly and we went to Swan Lake drainage district. At or near the pumping plant, about ten miles southwest of Winchester, I found Mr. Trout from Beardstown had cut an opening in the levee to let the water out and above it in the channel, he had driven posts and put chicken wire on them to prevent the fish from getting out. I had all this taken out. I gave Warden Tankersly instructions to keep watch on the lake, also advised him to go to a lake below where they were draining and prevent violations of the law.

I then went to Oakford and met David Watkins, as instructed. I found that there is a drainage district there which empties into Salt creek. The ditch is full of stumps and logs and the drainage commissioners are having the stumps blown out with dynamite. They are killing a great many fish. I did not interfere with them until I could report the facts to you and get your advice on it before commencing proceedings against them. I think there can be other devices for taking out the drifts and save the fish.

November 16—Defendant, Louis Stinelecht, Chatsworth, Livingston county. Section 1 violated. Judge, Robert H. Bill, Chatsworth. Decision, guilty. Amount of fine, $25,00 and costs. Three hoop nets and two seines taken.

Went to Chatsworth and investigated the complaints from there. Found evidence against Louis Stinelecht and made complaint against him before Robert H. Bill, a J. P. in Chatsworth. After the said Robert H. Bill had heard the evidence against Stinelecht he fined him $25.00 and costs. There will be more work around Chatsworth in the near future, as the people have not known where nor to whom to make complaints. On this trip I found and destroyed three hoop nets and two seines.

November 23—Ten pounds undersized lake trout disposed of. Went to Decatur and examined the shipmets at the express office there. Found four black bass in one shipment from the Meredosia Fish Co.. Shipment was going to St. Louis. On my way home I found at Springfield, at T. C. Murray's fish market, ten lake trout that together weighed only ten pounds. I confiscated the trout and gave them to the hospital. They were shipped from Thomas O'Hern, of Chicago.

November 30—Defendant, Wm. Geoharing, Sand Slough, Carroll county, and Bruno Shrine, Chatsworth, Livingston county. Judges W. D. McCone, J. P., Thompson, and Robert H. Bell, J. P., Chatsworth. Decision, guilty. Amount of fine, $25.00 and costs in each case. Fines collected, $50.00 and costs. Two hundred and sixteen pounds undersized fish disposed of.

Went to Galena and met Warden Whitman and we went along the Mississippi river as far as Thompson. Found that the fish laws are being violated to a great extent. The claim is made in every case the fish have been caught

on the Iowa side of the river. On the train from Havana to Thompson we took 126 pounds of bass and pickerel shipped by J. Garrow at Savana, Ill., to W. H. Jenks at Clinton, Iowa. They were marked carp and crappies. We gave them to section hands, as there were no hospitals or other charitable institutions nearby. I left the case with Warden Whitman, as Mr. Garrows was not at home. We then went to Sand Slough and found about 50 pounds of undersized fish with William Geoharing. We took the fish and Geoharing to Thompson and made complaint before W. D. McCone, a J. P., who fined Geoharing $25.00 and costs which was paid to the J. P. I then went to Chatsworth to answer complaint from there. After investigating the case I found evidence enough to arrest Bruno Shrine, and took him before Robert H. Bell, a J. P. in Chatsworth, who fined him $25.00 and costs, which was paid. I then went to Champaign and at May Bros.' fisn market I confiscated 40 pounds of lake trout which were under weight, which I donated to the hospital. They were shipped to May Bros. by J. B. Jessop, of Chicago. I will attend the prosecution of these parties Dec. 21, 1907.

Defendants, John Hawk, Warren Hawk, Udell Hawk and Robert Hawk, of Granite City, Madison county, Illinois. Judge, J. W. Kinders, J. P., of Granite City. Case postponed to Jan. 3. One hundred pounds undersized fish disposed of. Five seines taken. The parties were seining in Chauteau slough. Went to Edwardsville and saw the State's attorney, but he was busy in court and had the case put off until the 3d of January. Got 17 pounds of fish at St. Clair fish market in East St. Louis. They were shipped on the 17th day of December by the Havana Fish Co.; consisted of sunfish, striped bass, crappies and pike, all undersized. Gave them to Jas. Goff, overseer of the poor in East St. Louis.

January 14, 1908—Eighty-seven pounds of undersized fish disposed of. Went to Granite City to attend the trial of the four Hawks that I made complaint against two weeks ago and whose trial was put off on account of the State's attorney being too busy to attend to it sooner. I went into the court room about an hour before the time for the trial and there were several parties sitting around the stove talking with the justice of the peace. None of them knew me, but the justice and another man were talking. They had their backs turned to me and did not see me. I heard them discussing the case and the justice said it was spite work and that it would not last long when it came to trial before him. When the time for the trial came I had the attorney withdraw it and told the justice why I had done so. I told him that he had tried the case around the stove and that he had given his decision in the case, and I told him I would commence it again at Edwardsville. I then went to East St. Louis and examined the fish markets there, but found no violations. I then went to Decatur and at the Pacific express office in the Wabash depot I found a consignment of fish from J. C. Workman, of Meredosia, billed to the St. Clair market in East St. Louis. After examining them I found 87 pounds of black bass in the bottom of a barrel of mixed fish. I dumped them according to your orders. They were marked "fine buffalo."

January 11, 1908—Went to Decatur and Bloomington and examined the express shipments and fish markets. At Decatur I found the fish markets all right until I came to W. A. Brown's market. There I found 29 pounds of black bass, shipped by Henry Lemm from Pekin, which I confiscated and gave to the poor master and for which you will find receipt enclosed with this report. I will visit East St. Louis and neighboring towns next week.

February 15, 1908—Went to Danville to investigate Ex-Deputy Warden Fred Johnke as per your orders. I found that under Sheriff Whitlock there had been two seins, one trammel net and five hoop nets placed with him which he destroyed. The two seines, one trammel net and two hoop nets I turned over to the sheriff. That leaves but three hoop nets that Warden Johnke put with him and I find but two seines with the present sheriff that Johnke turned over. This does not correspond with the amount of property that he has reported time and again. I also find in the case from Alvin that it has been before the grand jury and they could get nothing out of it. The people

will not tell things freely since they know that the commission is investigating it. You have the affidavit from one of the parties near Alvin. I don't think we can find much evidence at present. I think it advisable to wait awhile until the fear leaves the people, as they appear to be afraid to tell what they know. I will go to Decatur, Springfield and East St. Louis and examine the markets and shippage.

February 29—Went to Granite City by your order. Found that the party had taken out a license on Nov. 8th, 1907, for a trammel net and for which he paid $5.00 to the City Clerk of Granite City. The slough where he is fishing joins the Mississippi river. As the law is at present, we cannot keep him from seining it as long as he pays license on the nets or seines he uses. I notified the party who made the complaint that we could do nothing, as the party he made complaint against had complied with the fish laws. I then examined the markets at East St. Louis, Springfield and Decatur. There are but few fish being shipped on account of the high water in the river.

March 28, 1908—Went to Decatur and found at J. W. Krifft's fish market 43 pounds of black bass, which I confiscated and gave to St. Mary's hospital. The fish were shipped by Rudolph Shaffer from Havana.

April 4, 1908—Went to East St. Louis and made complaint against John Wuest for trammel netting in Pittsburg lake. When I brought him before Squire Edw. P. Williams in East St. Louis, the J. P. asked him, after the complaint had been read to him, if he was guilty. He said he would not deny using the net, but that he was not guilty of violating the law. He said he wanted to test the constitutionality of this case. The case was then continued until next Thursday, the 9th, at 9 o'clock.

April 11—Went to East St. Louis to attend the trial of John Wuest in Edw. P. Williams' court for trammel netting in Pittsburg lake. The case did not come to trial. John Wuest pleaded guilty and was fined $25.00 and costs by Edw. P. Williams, a J. P. in East St. Louis. The fine was paid the J. P.

July 18—Went to Custer Park and got S. W. Burt, the party that made the compalint to the Governor in regard to the fishway in the dams at Wilmington, and took him over to the dam to show me what it lacked. He waded out on the dam and found the opening to the fishway. It measured 15x18 inches, but we could not get at the fish ladder on account of the way it was built and the water was so high that we could not get at it. This dam is owned and controlled by a firm that owns the paper mills at Wilmington. At the present time the mill is in the hands of a receiver, but I saw Frank Ream, the foreman that has charge and care of the mill, and I told him they would have to change the fishway; take it out from under the dam, turn it down stream so that it could be inspected at any time and to show to the people that there really was a fishway in the dam. I told Mr. Ream that there was much complaint in regards to the fishway, and he said that he had to repair the levee by the dam and while he had the men at the dam he would change the fishway and have it made larger. I think they will make it so that it will satisfy the people above the dam.

August 22—Went to Chatsworth to answer complaint from there in regards to the fish perishing in Turtle lake, five miles from Chatsworth. Found the lake or pond nearly dry, so I took what fish were alive and put them in deep water in a dredge ditch. Went to Monticello and found evidence enough to justify me in making complaint against Frank Hess, Lee Baker, John Willy, Ed Loker, Jas. Merris, Oliver Beck, Wm. Taylor, Isaac Harver, Harvey Hiser, Sam Hiser and Jacob Hiser for trammel netting in the Sangamon river five miles southwest of Monticello. I preferred two charges against them, one for obstructing the free passage of fish, the other for catching fish with a trammel net in a stream not used for navigation. I made complaint in the county court, as I think I will get better results than I could before a J. P., as I have had several cases tried before the justices in Monticello with very

poor results. There were fourteen in the gang, but I only got eleven of them. I will go back next week and get the other three. These people all live in Cerro Gordo and have been catching fish in great quantities and have been at it for a long time.

August 28—Twenty-seven traps destroyed.

September 5—Put in two days with Deputy Warden Addis along the Sangamon river north and south of Oakley. We covered the ground spoken about in the complaint, but we could get no evidence to make any arrests. We found traps in the river that we destroyed. I also made two trips to Hammond to see the party who made the complaint, but did not find him at home either time.

October 3—Went to Streator and Pontiac and delivered notices to the parties owning and controlling the dams at these places for them to put in fishways in the dams. Went to East St. Louis to answer the complaint from Pittsburg lake. I caught Frank Kaase catching fish with a trammel net. I arrested him and took him to East St. Louis and made complaint against him before Esquire Edw. P. Williams, J. P., and Kaase decided to stand trial. The case was continued until next Friday, the 9th.

October 12—Went to Sangamon river near Wilson Park and destroyed five traps.

October 17—Went to East St. Louis to attend the trial of Fred Kaase that was continued from last week. It was continued until Nov. 6. I investigated the condition of Pittsburg and adjoining lakes that will be drained by the dredge ditch. I found that the dredge will not get into the lake much before January, and as for the fish perishing before that time, there is nothing in it at present. They need not be looked after until the dredge enters the lake. It must be remembered that when the dredge really gets into the lake the fish must be cared for or they will perish.

REPORT OF E. E. CALDWELL, FISH WARDEN.

The year has not been as good for commercial fishermen as the year 1906 owing to the long continued high water, but has been one of the best years for propogating that we have had for years. The river has been high enough during the entire year to allow the young spawn free access to the low ground along the river where they could protect themselves from the larger fish and at the same time have the advantage of the vegitation.

During the closed season, as directed by you, I made a trip in the steamer "Illinois" from LaSalle, Ill., to Louisiana, Mo., enforcing the law. We found the fishermen on the Illinois river obeying the law very well. We only had to confiscate sixteen nets from La Salle to Grafton, as follows:

April 23—Three nets above Henry; F. A. Whitman and myself on board.
April 24—Seven nets above Peoria; F. A. Whitman and myself on board.
April 28—One net above Meredosia; F. A. Whitman and myself on board.
April 30—One net above Beardstown; F. A. Whitman and myself on board.
May 4—Four nets above Grafton; F. A. Whitman and myself on board.

Mississippi River.

May 4—Twenty-eight nets above Grafton; F. A. Whitman and myself on board.
May 16—Sixteen nets near Sun Landing; F. A. Whitman and myself on board.
May 16—Four nets near Hastings Landing; F. A. Whitman and myself on board.
May 5—Twenty-two nets near Mozier Bay; Harbonner, Whitman and Caldwell on board.
May 6—Seven nets across from Clarksville; Whitman and myself on board.
May 6—Fourteen nets near Cotton Wood Landing; Whitman and myself on board.

At Louisiana a sdirected by you, I returned to Havana, to begin preparations for the new law which would be effective July 1. From that time on I have devoted my time to the preparation of, and distribution of, the licenses and tags.

I have distributed 1,810 seine tags, 1,480 trammel net tags and 28,200 hoop net tags to 140 county, city and village clerks, situated along the principal rivers in the State where fishing is carried on to any great extent. The law is looked upon by the great majority of fishermen as the best we ever had and surely it will be the means of placing Illinois in the front rank as a fish-producing State, as the small license charged in the law will in a very short time give sufficient revenue to put hatcheries at the more important places where the propogation of the finer varieties can be done cheaply and successfully.

To date there has been turned in to the State Treasurer between $7,000 and $7,500 from the licenses, which is surely a good showing considering that the river has been high for seining the greater part of the time. In order to have success in seining the river should not be to exceed eight feet above low water mark. So that you may know what difficulties the fishermen have had to work against. I am giving in this report the stage of water at the bridge at Havana by C. A. Gore, the bridge tender. The report is given on the 5th and 15th of each month:

Jan. 1—10 ft. 1 in.; Jan. 15—11 ft. 9 in.
Feb. 1—17 ft.; Feb. 15—13 ft. 6 in.
Mar. 1—12 ft. 3 in.; Mar. 15—12 ft. 1 in.
Apr. 1—12 ft. 7 in.; Apr. 15—12 ft. 9 in.
May 1—11 ft. 5 in.; May 15—11 ft. 2 in.
June 1—11 ft. 6 in.; June 15—12 ft. 5 in.
July 1—11 ft. 6 in.; July 15—11 ft. 9 in.
Aug. 1—12 ft. 9 in.; Aug. 15—11 ft. 9 in.
Sept. 1—12 ft. 5 in.; Sept. 15—10 ft. 7 in.
Oct. 1—10 ft. 2 in.; Oct. 15—11 ft. 2 in.
Nov. 1—9 ft. 5 in.; Nov. 15—8 ft. 8 in.
Dec. 1—8 ft. 8 in.; Dec. 15—8 ft. 8 in.

A. BUSHMAN, PULLMAN, ILL.

Jan. 31, 1907—Defendant William J. Landon of 6919-21 Anthony ave., Cook county. Sec. 6 violated. Judge Maxwell of Hyde Park. Decision, guilty; lake trout. Judge in this case said no doubt defendant was guilty, but this being first offense would let him go.

Feb. 7, 1907—Defendant A. Thortentesan, 113th Place and Michigan avenue, Cook county. Sec. 6 viloated. Judge Maxwell of Hyde Park. Not guilty.

March 16, 1907—Joe Miskie, 9120 Adams avenue, S. Chicago. Decision, guilty. Seven pickerel shot with a rifle. Judge let him go on account of being first offense.

March 16—John Danns, 9224 Jefferson avenue. Same as above.

April 2, 1907—Naton Leverson, 524 Jefferson street, Cook county. Sec. 6 violated. Judge Baumgartner, 13733 Wabash avenue, Chicago, Ill. Decision, guilty. Fined $25.00 and costs. Twenty-four undersized fish disposed of. Defendant was fined $25.00 and costs but fine was remitted.

April 12, 1907—Defendant A. Tuschneskey, 422 Twelfth street, Cook county. Sec. 6. violated. Judge Maxwell, Hyde Park. Decision, guilty. Judge let him go, being first offense.

May 2, 1907—Defendant Gus Neis, Lake Calumet, Cook county. Sec. 18 violated. Judge Girtin, So. Chicago. Decision, guilty. $25.00 and costs. Fine collected and sent to State Treasurer. Net taken.

Defendant James Zajineck, Lake Calumet, Cook county. Same as next above.

June 4, 1907—Henry Witt, 14729 Sealey avenue, Blue Island, Ill., Cook county, defendant. Sec. 18 violated. Judge A. Baumgartner of 13733 Wabash avenue, Riverdale, Ill. Decision, guilty. Amount of fine, $25.00 and costs. Defendant said he would not pay the fine and he was committed to the Cook county jail, where I took him.

June 4, 1907—Willie Witt, 138 Seeley avenue, Blue Island, Ill., Cook county. Same as next above.

June 1 to July 3, 1907—William Stein, 135th and Calumet river, Cook county. Sec. 1 violated. Judge Ed. F. Sorgenfrie, Blue Island. Decision, not guilty. Twenty pounds undersized fish disposed of. This man is the worst customer on the river. He is dishonest and has been arrested time and time again, and in this case he demanded a jury trial, and when the trial was over the judge told me that they were scared to find him guilty.

July 29, 1907—Defendant James McKiver, 4416 Union avenue, Cook county. Sec. 1 violated. Judge Pearson, Blue Island, Ill. Decision, guilty. Amount of fine, $25.00 and costs; fine remitted. One seine is at Blue Island police station. The judge said he would remit the fine as these men were guilty, but they should not do it again. This is the same crowd that all complaints are made about at Blue Island.

July 11, 1907—Defendant B. Leitors, State Line of Illinois and Indiana, Cook county. Sec. 1 violated in Lake Michigan. Judge Langtreh, South Chicago. Decision, guilty. Amount of fine, $25.00 and costs, $33.50; collected $25.00. Threw back about 300 pounds of undersized fish. One net taken. Had to go at least six times to catch this man as he is an old timer at the fishing game.

July 29, 1907—Defendant William Canty, 22 Greenwood, Blue Island, Ill., Cook county. Sec. 1 violated. Judge Pearson, Blue Island, Ill. Decision, guilty. Amount of fine was remitted. One seine is now at the Blue Island police station. This is another one of the crowd from Blue Island, where so many complaints have come from. This is the fifth man I have arrested from Blue Island.

LAFAYETTE BEEBE.

October 1, 1907.—Report ending September, 1907.—One arrest, one conviction. This case was against John Wilson for trammel netting in Pekin Lake. A fine of $25.00 and costs was imposed by Justice Rapp, who gave Wilson time in which to pay same.

March 11, 1908—Unedrsized fish disposed of. 100 pounds of small pike returned to water. Three small pike returned to water. Three small mesh dip nets taken.

Friday, March 13—Went to Peoria. Took 7 dip nets from parties; turned back in river 900 small pike, 6 to 10 inches long.

JOHN BUTTRICK.

PEORIA, ILL., Nov. 30, 1907.

Having diligently performed the duties of fish warden in Peoria county I found no cause to prosecute for the selling of or having in possession illegal sized fish. Found no nets in the water not legally taxed or other violations of the fish laws.

December, 1907—Have been keeping close watch for black bass on the different fish markets or for undersized fish of different kinds. Found no nets in the waters between Peoria and Chillocothe that were not properly tagged.

July 27, 1908—Have been at the different fish markets in the city of Peoria in the month of January. Could do nothing on the water on account of ice and high winds. No violations of the fish laws that could be proven.

February, 1908—Examined the fish at the different fish markets in Peoria twice a week. Found no bass and only a few fish of any kind. Went to Chillocothe once during the month, and once to Pekin to confer with Mr. Whit[illegible]an.

March 30, 1908—March 9 made a trip to Chillocothe. Found everything all right at that time. From the 10th to 20th found a number of persons catching small pike with dip nets and snares. Finally succeeded in breaking that business up.

March 14—Seized 67 black bass and a few undersized sun fish, at what is known as the Sun Fish and Game House, 122 South Washington street, Peoria, Ill., operated by Francis Leclaire. As to the case, information filed before the Peoria County Court.

August 5—Went up the Illinois river from Peoria to Chillocothe.

August 7—From Peoria to Mossville.

August 12—From Peoria to Horseshoe Slough.

August 22—From Peoria to Spring Bay.

August 29—Down the river as far as Pekin. Found no violations of the fish law.

September 10—Went to Chillocothe and in company with Mr. Wilkey went up and down the river. Found everything all right.

September 14—Made a trip in company with Wilkey down the river; found no violators of the fish laws.

September 22—Went to Mossville and across the river into Horseshoe slough.

September 24—Went again to Chillocothe and with Mr. Wilkey went by river as far as Lacon, Ill. Found nothing wrong on any of these trips.

The undersigned, in compliance with the request contained in your letter of October 7, 1908, has the honor to submit the following report of arrests and convictions made by him from the date of his appointment, August 13, 1907, to October 29, 1908:

March 14, 1908—Arrested Frances Leclaire. Charge, unlawful possession of game fish, black bass, out of season. Before A. V. D. Rosseau, J. P., Peoria county. Dismissed by state's attorney. Information filed in county court. Case still pending.

March 14, 1908—Arrested ——— Rogers. Same charge as above. Before A. V. D. Rosseau, J. P., Peoria county. Charge dismissed upon defendant showing he was employé and in no way responsible for fish found in possession of Francis Leclaire.

March 21, 1908—Arrested William Wilhoit. Charge, catching fish by means of unlawful device, to-wit, a snare. Before A. V. D. Rosseau, J. P., Peoria county. Plea of guilty by prisoner. Fined $25.00 and costs. Fine suspended during good behavior.

C. F. SCHULTZ, DANVILLE, ILL.

August 2—Defendant A. Handle, Graysville, Wabash county, Illinois. Sections 1 and 19 violated. Five mesh nets under 1½ inches square taken. Case not tried. Parties under bond for October term of court.

September 7, 1907—Sec. 17 violated. 42-lbs. undersized fish disposed of. Confiscated these at Mattoon Sept. 5. Same were black bass and billed from Havana, Ill., to Indianapolis, Ind. Turned these over to the Odd Fellows' Old Folks' Home at Mattoon.

November 1, 1907—On October 22 received orders from A. Sites to come to Homer and go with him to Sullivan, Ill. On my arrival at Homer, the trip was postponed until Monday, Oct. 28, on which date we went to Sullivan

and then went to the Okaw river and tore out and destroyed three fish dams attached there to for the purpose of catching fish and returned home on Oct. 31.

On our return home from Sullivan I spoke to Mr. Sites about the fish ladder in Ellsworth Park on the North Fork. On my arrival home I found out that Mr. Beard was putting one in. He had men go to Homer and measure the one there in the Salt Fork dam. I have seen the one Mr. Beard put in. It looks all right so far as I can see at present. The dam is still open, so we can't see at present just how it will work.

January 15, 1908.—Defendant Adam Hanbe, Grayville, Ill., Wabash county. Section 1, 19 and 21 violated. Judge Loop, Mt. Carmel, Ill. Decision, guilty. Amount of fine, $25.00. Fines collected, $25.00. Amount of fine sent to State Treasurer by clerk of court.

April 23—Defendant A. Booth, Chicago. Sections 17 and 18 violated. Two hundred pounds yellow perch. These fish were given to the hospitals and children's home at Danville.

August 30, 1908—One net taken Aug. 16, 1908. Owners unknown at present.

October 2, 1908—Three hoop nets taken. Owner unknown.

L. N. STURDGOIN, HENNEPIN, ILL.

October 24, 1907—Been over the river from Peoria to Rohme this week and find everything in fine order. They are doing fine taking out tags. All seem to be satisfied.

March 18, 1908—Defendant James Hurt, Hennepin, Ill., Putnam county. Section 17 violated. Judge J. W. Turner, J. P., Hennepin. Decision, judgment of conviction on plea of guilty. Amount of fine, $25.00. Amount sent to State Treasurer, $12.50. Defendant was arrested for selling and offering to sell black bass.

WILLIAM BROWN, BLUE ISLAND.

May 7, 1908—Went to Peotone on complaint of Mr. Dewey. May 8 went to Kankakee on complaint of Mr. Dewey of Peotone, but did not find any violations on the Kankakee river.

May 14—Arrested two drivers of Mr. Arenstein, fish dealer in South Chicago, for hauling fish out of season, two loads of carp and buffalo. Mr. Arestein was acquitted by Municipal Judge Petit at South Chicago. The judge stated that he was satisfied that the man was guilty as charged, but that he had been booked under the wrong section of the State fish law.

June 4 and 5—Went to McHenry and Carey on the Fox river looking for violations but was unable to find them as my coming had been tipped off to the guilty parties by some body.

June 24—Arrested John and Henry Bass for fishing with seine on Calumet river before sunrise. Defendants asked for a jury trial of Judge Baumgardner of Riverdale. Said jury acquitted them of the charge.

June 24—Arrested Herman Litka for seining on Calumet river before sunrise. He was fined $25.00 and costs by Judge Baumgardner of Riverdale. Paid the fine and costs and fine was forwarded to the State Treasurer.

August 21—Arrested John Swartz for seining in Calumet Lake. Case still pending in court.

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LIBRARY

SILVERY LAMPREY,
Ichthyomyzon concolor (Kirtland.)

August 12—Arrested Renald Maslowski for seining in Calumet lake. Case still pending in court.

August 12—Arrested William Rehm for seining in Calumet lake. Case still pending in court.

August 29—Arrested John and Henry Bass for seining on June 24 in Calumet river. John Bass fined $25.00 and costs before a jury in Judge Doolittle's court in Blue Island. John Bass appealed the case to the criminal court of Cook county where it is now pending. The same jury in Judge Doolittle's court discharged Henry Bass.

September 1—Left Blue Island on an investigating trip on the Illinois river on the steamer "Illinois." Arrived at Peoria on Sept. 2d at 9:30 a. m.; passed Henry Locks at 1:00 p. m.; stopped 30 minutes at Hennepin; left Hennepin at 2:50 p. m. and arrived at Peru at 4:30 p. m.

September 3—Left Peru at 7:30 a. m. Took some nets at Spring Valley, but returned same as the fishermen had license but had failed to put their tags on nets. Left Spring Valley at 8:40 a. m. Took three nets at Marquette but returned same as fishermen had license but had also failed to put tags on their nets. Left Marquette 10:00 a. m., and went with launch through Snatchwine lake but found all nets on shore. Passed through Henry lock at 2:20 p. m. Nets were all tagged up as far as Chillicothe, where we arrived at 4:10 p. m. Left Chillicothe Sept. 4, at 6:25 a. m. Took nets in Peoria lake, but same were returned to fishermen by Warden F. Whitman on representation that they had their licenses. Arrived at Havana Sept. 7.

June 25—Defendant Herman Luedtke; address, Riverdale, Ill., Cook county. Sec. 17. Judge A. Baumgartner. Address, Riverdale, Ill. Decision guilty. Amount of fine, $25.00. Fine collected, $25.00; amount of fine sent State Treasurer, $25.00 .

JOSHUA PRYOR, SEATONVILLE, ILL.

Aug. 10, 1907—Defendant, Irwin Marliere, Du Pue, Ill., Bureau county. Sec. 1 violated. Justice J. C. White, Seatonville, Ill. Decision, guilty. Amount of fine, $25.00; amount sent to State Treasurer, $12.50; Three unlawful nets, 1-in. mesh taken.

W. K. ADDIS, DECATUR, ILL.

July 24—Destroyed 4 traps.
July 24—Destroyed 2 traps.
July 27—Destroyed 6 traps.
July 29—Destroyed 3 traps.
September 6—Destroyed 1 trap.
September 14—Destroyed 3 traps.
August 4—Destroyed 2 traps.
August 9—Destroyed 4 traps.
August 15—Destroyed 3 traps.
August 29—Destroyed 1 trap.
October 7—Destroyed 2 traps.
I have also destroyed about 20 dip net poles and forks.

D. H. BLAKER, WEST YORK, ILL.

October 20—I have spent several days each month on the Wabash river since my appointment under date of May 22, between York in Clark county, and Palestine in Crawford county. I have up to this time made no arrests as the only violations of the fish law which have come to my notice were a few parties early in the season fishing without a license. This, however, I found to be due to the fact that our County Clerk was not at that time supplied with blanks. As soon as these parties could procure licenses they did so, and I of course made them no trouble. I enclose herewith a memorandum of the licenses as issued by our county clerk. He informs me he has issued about double the number of licenses issued last year, showing that a deputy on the river has had a good effect. I am now engaged in collecting evidence against some parties in Clark county for killing fish with dynamite and expect soon to secure a conviction. All of which will be reported to you in due time.

GEORGE ROHWEDER, GENESEO, ILL.

Received by American Express Co. from Sterling, Ill., one small mesh seine billed to me from George Rohiveder. Charges paid. Will notify States Attorney at once.

C. C. FULLER,
Sheriff of Whiteside Co. Ill.

Morrison, Ill., Nov. 12, 1906.

May 30, 1907—Am told and do honestly believe that the territory from Chillicothe to LaSalle has been cleaner this closed season than ever before.

September 1, 1906—Report from Jan. 1st to Sept. 1, 1906—Twenty-four arrests, ten convictions; two awaiting trial; three sent to jail. Amount of fines about $400.00. Twelve nets taken. Fourteen traps discharged. Above work done in LaSalle, Henry, Ogle, Whiteside, Bureau and Rock Island counties.

Nov. 15, 1907—Report from Oct. 1, 1906, to Oct. 1, 1907. Eighteen arrests; 5 convictions; 2 seines taken; 1 net taken; 30 fish traps destroyed. Find that there are not nearly as many violations of the law as a few years since.

April 16, 1908—Mr. Studgoin and myself opened several barrels of fish at Bureau, with the permission of the Express agent yesterday, and found 48 pounds of black bass, some of which weighed 5½ pounds each. We sent them to St. Francis hospital at LaSalle, charges prepaid. Had Bauter Bros., the shippers, arrested for shipping fish not properly marked and shipping black bass caught with other device than hook and line. They are going to stand trial and prosecute us for opening their packages.

FRED M. JOHNKE, DANVILLE, ILL.

Receipt of H. L. Whitlock, Sheriff, for one trammel net which was taken from the Vermilion river, Oct. 1, 1906, about 7 miles below Danville, at a place known as Hubbert's Ford. It was 200 feet long and 15 feet deep.

February 4, 1907—Receipt of W. H. Helmick, Sheriff, for two seines taken at Alvin, Ill.; one 50 foot seine and the other 90 foot seine.

EAD DINSMORE, DANVILLE, ILL.

August 3, 1908—Defendant, Frank Coombs, Hillery, Vermilion county. Chapter 56, sec. 16, violated. Judge Henry J. Hall, 13½ East Main street, Danville. Decision: Ordered awarded and adjudged that defendant, Frank Coombs, be fined $25.00 and costs. Amount of fine, $25.00; fine collected, $25.00; amount sent State Treasurer, $25.00. This expedition was the result of the drowning of one Art Davis at Missionfield, this county.

August 3, 1908—Defendant, George Green, Hillery, Vermilion county, Ill. Chapter 56 violated, sec. 16. Judge, Henry J. Hall, 13½ E. Main street, Danville, Ill. Decision: Ordered awarded and adjudged guilty. Amount of fine, $25.00 and costs; fine collected, $25.00; amount of fine sent to State Treasurer, $25.00.

RICHARD DYE, JACKSONVILLE, ILL.

On April 24, 1908, I received a letter from Mr. Oliver of Alhambra, Ill., stating that there had been violations of the fish laws at that place. On April 25th I went to that place, which is a little town on the Illinois Central railroad, thirty miles northeast of St. Louis, in Madison county, Ill. I found that there were some Greeks working on a railroad contract west of the town. There was a little creek near the camp, too small to contain any fish of importance. The Greeks were supposed to have violated the law, but I could find no evidence of any wrong doing, and Mr. Oliver could give me no evidence of any wrong doing. I made no arrest and returned April 27, 1908.

On May 11, I started on a trip to watch express companies, this being the season that companies are not allowed to ship any fish. I was in Meredosia May 11, in Bluffs, May 12, Naples May 13, and Valley City May 14. I found no fish at any of these points. There were no nets in the river at any of these places and no violations of the law that I could find. I went from Valley City to East St. Louis, Ill. I remained in East St. Louis until May 17. I found fish being shipped from East St. Louis, but also found affidavits showing them to have been caught in Missouri. As I had no authority over fish caught in Missouri, I did not interfere.

In response to a telegram from Mr. Cohen, I caught the steamer "Illinois" at Meredosia, Sept. 8, with orders to enforce the tag law. Found the boat in charge of W. M. Brown of Blue Island, Ill. Met Deputy Warden Edward Marsh of Chicago, Deputy Fred Jones of Blue Island and Deputy Howard Smith of Bloomington. We went down the river to Grafton, Ill., and returned to Havana, Ill., Sept. 12, 1908. We had no trouble until we reached a point about half way between Meredosia and Beardstown, where we took three nets that were not tagged. We met the owner of the nets coming with the tags. He claimed he had not had time to put them on his nets and we returned the nets to him.

At Beardstown we took 3,000 feet of net that was not tagged. This seine was taken forcibly from W. M. Cole. He refused to take out a license or tags. We went on to Havana without any further trouble and left the seine taken from Mr. Cole at the fish hatchery at Havana in charge of Warden Caldwell. I left the boat at Havana Sept. 12 and returned to Jacksonville.

I wish to say that I find the fishermen to be a class of people not any too ready to obey the fish laws. They seem to think the law is detrimental to their interests. They do not seem to realize that if it were not for the enforcement of our law and the propogation and distribution of fish, they would be out of business in a few years. I will close with the suggestion that the period of seining should be shorter and the law strictly enforced on undersized fish.

EUGENE MANLEY, YORKVILLE, ILL.

April 3, 1907—One arrest, 1 conviction. Fine $25.00 and costs. Eli De Graff was arrested and brought before Justice of the Peace W. Thompson at Yorkville, Kendall county, Illinois, for fishing with a dip net in Fox river, Saturday, March 30, 1907. He plead guilty and paid his fine of $25.00 and costs.

HOWARD L. SMITH, BLOOMINGTON, ILL.

I received my commission June 1. The rivers in this part of the State were then very high. From June 20 to July 4 the water fell rapidly and nearly all the fish went down to deeper water, except a few catfish and carp that remained in stagnant pools.

This has been the poorest season we have ever had for fishing in this vicinity, owing to the unprecedented drought. I served seven days on board the "Illinois" in September and you will find a report from Deputy W. H. Brown, of Blue Island, contains my name. I have not made any arrests in this vicinity. Have investigated every rumor of any weight and have not received a single formal complaint.

GEO. B. KLEMMAN, CHICAGO, ILL.

October 31, 1906—John Kaminiski, name of defendant, South Deering, Cook county, Illinois. Section 1 violated. Judge Foster of South Chicago. Decision, guilty. Fine, $25.00. Fine collected, $25.00. Amount sent to State Treasurer, $25,00. Fined for fishing in Calumet lake.

May 29, 1907—Defendant, Eppe Newhouse, Pullman, Cook county. Section 1 violated. Judge, Gerten, South Chicago. Decision, guilty. Amount of fine, $25.00. Fine collected, $25,00. Arrested for fishing in Calumet lake.

May 29, 1907—Peter DeHaas, Pullman, Cook county. Section 1 violated. Judge, Gerten, South Chicago. Decision, guilty. Amount of fine, $25.00. Fine collected, $25.00. Arrested for fishing in Calumet lake.

June 15, 1907—Defendant, Robt. Boutell, Chicago, Cook county. Section 6 violated. Judge, Fake, Chicago. Decision, guilty. Amount of fine, $25.00. Amount of fine collected, $25.00. Fined for selling small trout.

July 9, 1907—Defendant, Chas. Witte, Chicago, Cook county. Section 6 violated. Judge, Crowe, Chicago. Decision, guilty. Amount of fine, $25.00. Amount collected, $25.00. Fined for selling small trout.

November 9, 1907—Defendant, Theo. Kaminiski, South Deering, Cook county. Section 17 violated. Judge, Baumgarten, Riverdale. Decision, guilty. Amount of fine, $25.00. Amount of fine collected, $25.00. Fined for fishing after sundown.

November 9, 1907—John Swartz, defendant, South Deering, Cook county. Section 17 violated. Judge, Baumgarten, Riverdale. Decision, guilty. Fine collected, $25.00. Fined for fishing after sundown.

July 2, 1908—Defendant, Jas. Miller, Hegeswick, Cook county, Illinois. Section 1 violated. Judge, Baumgarten, Riverdale. Amount of fine, $25.00. Amount collected, $25.00. Fined for fishing out of season.

July 27, 1908—Defendant, John Swartz, Chicago, Cook county. Section 1 violated. Judge, Baumgarten, Riverdale. Decision, guilty. Amount of fine, $25.00. Fine collected, $25.00. Amount sent to State Treasurer, $25.00. Fined for fishing out of season.

August 7, 1908—Defendant, Clemens Kirby, Kensington, Cook county, Illinois. Section 1 violated. Judge, Baumgarten, Riverdale, Ill. Guilty. Fined $25.00. Same collected and sent to State Treasurer. Fined for fishing out of season.

A. C. WILKEY, CHILLICOTHE, ILL.

September 21, 1907—Arrested John Davidson for shipping black bass. Fined $25.00. Paid to Justice Atwood at Peoria.

September 21, 1907—Arrested Jesse B. Horn for shipping illegal sized fish. Fined $25.00. Paid to Justice Atwood at Peoria.

February 17, 1908—Arrested Fred Thompson; shipping black bass. Fined $25.00. Paid to Justice Woodward.

March 10, 1908—Confiscated 56 pounds illegal sized fish from H. Hall, of Henry, Ill. Sent fish to Home of Friendless at Peoria. Fined $25.00. Paid to Justice Miller, Chillicothe, Ill.

April 1, 1908—Confiscated one barrel of fish from Roberts Bros., of Chillicothe, Ill. Sent fish to Home of Friendless, Peoria. Fined $25.00. Paid to Justice Miller, Chillicothe.

August , 1908—Arrested Fred Bauter; illegal seining. Fined $25.00. Paid to Justice Jas. Chambers, Henry, Ill.

September 22, 1908—Arrested Mike Ferrick for illegal seining in Marshall county. Fined $25.00. Paid to Justice Monohan, Lacon, Ill.

September 29, 1908—Arrested John Dixon for attempting to ship undersized fish. Seized 2,500 pounds and sent them to the dump. Fined $25.00. Paid to Justice Mosley at Peoria, Ill.

November 14, 1908—Defendant, Frank Homer, Lacon, Marshall county, Illinois. Section 17 violated. Judge, J. Monshaw, Lacon. Decision, guilty. Amount of fine, $25.00. Fine collected, $25.00. Amount sent to State Treasurer, $25,00.

ELIJAH GASKINS, HARRISBURG, ILL.

Defendants, John Harker and O. N. Ferguson, Harrisburg, Saline county, Illinois. Judge, J. O. Vinson, Harrisburg, Ill. Defendants released upon returning fish to place whence they came. One barrel of undersized fish disposed of.

April 29, 1908—Defendants, Geo. Mitchell, Jas. E. Lynch and Earl Mitchell, Bedford, Saline county, Illinois. Seining unlawfully. J. O. Vinson, J. P. Geo. Mitchell guilty. Amount of fine, $25.00. Fine collected, $25.00. Amount sent to State Treasurer, $25.00. Other defendants acquitted.

JOHN J. TERRILL, COBDEN, ILL.

September 15, 1907—Have spent five days looking over the fishing grounds but have found no violations of law. There have been two cases of dynamiting reported. The sheriff and myself are working diligently in the matter but can find no evidence. There have been ten licenses issued in this county for trammel nets.

H. S. WHITMORE, GALENA, ILL.

June 1, 1907—Defendant, Michael D. Kaiser, Belleville, Jackson county, Iowa. Sections 17 and 18 violated. Judge, Edw. Clark, J. P., Galena, Ill. Decision, guilty. Amount of fine, $25.00. Fines collected, $50.00, two counts. Amount in hands of J. P. Edw. Clark.

November 27, 1907—Defendant, Wm. Grobaring, Thompson, Carroll county, Illinois. Sections 1 and 6 of law violated. Judge, C. D. McCorm, J. P., Thompson, Ill. Decision, guilty. Amount of fine, $25.00. Fine collected, $25.00. Thirty pounds black bass, undersized fish, disposed of.

February 15, 1908—Defendant, Chas. Lonards, Galena, Jo Davies county, Illinois. Section 1 violated. Judge, Edw. E. Clark, Galena, Ill. Decision, guilty. Amount of fine, $25.00 and costs. Amount sent to State Treasurer, $24.40. Forty-one pounds of fish, illegally caught and undersized, disposed of. Fined for fishing through hole in ice with dip net.

March 23, 1908—Defendant, Albert Fleck, Dubuque, Dubuque county, Iowa. Section 17 violated. Judge, Edw. C. Clark, Galena, Ill. Guilty. Amount of fine, $25.00 and costs. No fine collected; defendant sent to jail.

Defendant, J. M. Abbott, Guttenburg, Iowa. Section 17 violated. Judge, Edw. C. Clark, Galena, Ill. Decision, guilty. Amount of fine, $25.00 and costs. No fine collected; defendant sent to jail.

July 29—Defendant, Wm. Millsop, Clinton, Iowa. Section 1 violated. Tried by Judge Thomas H. Smith, Fulton, Ill. Guilty. Amount of fine, $25.00 and costs. Unable to pay fine and was sent to jail.

July 29—Defendant A. W. Keefer, Fulton, Whiteside county, Illinois. Section 1 violated. Judge, Thos. H. Smith, Fulton. Decision, guilty. Fine, $25.00 and costs. Unable to pay fine; sent to jail.

J. A. HARBOURN, BARRY, ILL.

April 2, 1907—Hoop nets taken from Long Island slough, 9; Bear Creek, 10; Luna Lake slough, 1; Indian Grove slough, 4.

On steamer "Illinois", 1 Long Lake slough; 3 out of river one mile below La Grange; 1 opposite Bath; 1 in Bath bay; 5 at Bath.

I went to Kampsville and found what might be called illegal fishing. The parties were catching shad and selling to farmers at $2.50 per wagon-load for hogs. Six of them went with me to Hamburg and got out $40 in seine and trammel net tags. This provided every man who is fishing at Hamburg or in the bay with tags for their seines and trammel nets. They are not using hoop nets yet.

November 21, 1907—Defendant, William H. Waters, Naples, Ill., Scott county. Sec. 17 violated. Judge, L. L. Grabbe, Naples, Ill. Guilty. Amount of fine, $25.00; fine collected, $25.00; amount sent State Treasurer, $25.00.

RECEIPT OF J. A. HARBOURN, PITTSFIELD, ILL.

March 14, 1908.

One trammel net, 65 yards long; said net belongs to John Collard of Ross township. Said John Collard was unlawfully fishing without tags on said net in unlawful fishing waters; same was confiscated by J. A. Harbourn on March 13, 1908, and delivered to J. A. James, sheriff of Pike county. Also

on pound net belonging to Anthony Roy. The said net was not tagged and was in lawful water. Taken on March 13, by J. A. Harbourn, and delivered to the said J. A. James, sheriff of Pike county, July 30, 1908.

EDWARD HAYES, CHICAGO, ILL.

January, 1908—Visited the following named places and found no violations of fish laws:

1-3-5—Milwaukee avenue, J. B. Jessop Co.
2—121 South Water street, B. Sloan.
3—Thirty-ninth street and Lake Michigan.
4—Wagner & Wilson, 310 Clark street.
5—156 South Water street, N. M. Welles.
7—Twelfth street and Lake Michigan.
8—2930 State street, B. Armound.
9—753 West Van Buren street, J. M. Baxter.
10—3218 State street, A. Golst.
11—North Pier and Lake Michigan.
13—Siegel Cooper Store.
14—42 River street, D. Starkel.
15—18 North Canal street, Lake Superior Fish Company.
16—184 West Lake street, Howland Heldon.
17—266 South Water street, Pentecost Bros.
18—Sixteenth street and Lake Michigan.
20—1449 State street, F. Kepler.
21—Thirty-ninth street and Lake Michigan.
22—121 South Water street, B. Sloan.
23—2930 State street, B. Armound.
24—The Fair Store.
25—Wagner & Wilson, 310 Clark street.
27—Sixteenth street and Lake Michigan.
28—North Pier and Lake Michigan.
29—Lake and State streets, A. Booth & Co.
30—3218 State street, A. Goldst.
31—Seigel & Cooper store.

CLINTON D. SPOOR, WAUKEGAN.

No arrests were made by me because there have been no violations of the law. All fishermen operating out of Waukegan have secured licenses and are complying with the law in every respect.

J. J. MUELLER, GREENVILLE, ILL.

May 29, 1907—Arrested John Wolf for fishing within 400 feet below a dam. Fined $25.00 and costs by Justice Harry Compton.

REPORT OF HENRY KLEINE.

CHICAGO, March 11, 1909.

Nat H. Cohen, Urbana, Ill.

DEAR SIR—Enclosed please find my report of the amount of carp seined for during the season 1908 in the Fox Lake region:

Fox river, Pistakee lake, Pistakee bay, 86,000 pounds.
Nippersink lake, Fox lake, Long lake, Grass lake, 104,443 pounds; 190,443 pounds at ½c per pound.

Cash receipts		$952 21
Paid to fish wardens for enforcement of the law, etc.	$660 43	
Hauling expenses, delivering fish to different lakes	19 50	
Telephone, telegrams, stamps, etc	25 50	
Railroad fare for year 1908	65 52	
Expense boats, repairs, etc	101 30	
		872 21
Cash received 1908	$952 21	
Balance on hand		$79 96

You will notice that our region is self sustaining and is not a burden to the State.

REPORT OF F. A. WHITMAN.

I hereby submit my report as fish warden since October, 1906. I have patroled the Illinois river from Peoria to Beardstown by launch and have taken much tackle used illegally and have returned many fish to the river illegally taken. On January 12th, I arrested two parties at Morris, Grundy county, for dynamiting fish, they paid fines at $100.00 each and costs of suits.

On January 21st, I arrested another party in Morris on same charge; he also paid fine of $100.00 and costs.

On April 23, 1908, while on board Steamer "Illinois" together with Warden Caldwell, we confiscated three hoop nets near Henry.

April 24, we took seven nets near Peoria.

April 28, we took one net near Meredosia.

April 30, we took one net near Beardstown.

May 4, we took thirty-two nets near Grafton and twenty nets near Sunset Landing on the Mississippi river.

May 5th, with help of deputies we took twenty-two nets above Mozier Bay.

On May 6th, we took twenty-one nets near Cottonwood Island.

May 9th, we took two nets near Keokuk.

May 10th, we took two nets near Ft. Madison.

On June 6th, I arrested two parties for using trammel nets near River Roads, Peoria county, and confiscated their nets and they were fined $25.00 and costs.

In July, 1907, I visited all Illinois towns from Grafton to Cairo on Mississippi river and from Cairo to Shawneetown on the Ohio river explaining the new fish law and instructing the clerks as to the sale of licenses.

SHOVEL-NOSED STURGEON,
Scaphirhynchus platorhynchus (Rafinesque.)

July 9th, I arrested a fisherman at Wesley City for fishing baskets and he was fined $25.00.

On July 22d, I took two nets below Lancaster Landing, set without tags and on November 6th, took one net in Mackinaw for same reason.

On May 13th, I delivered consignment of salmon fry to Dallas City.

I had charge of the Steamer "Illinois" for the enforcement of the fish law from April 15th to June 1st, 1908.

On April 30th, we took one net near Meredosia.

May 14th, we took four nets and 200 yard seine near Mozier Bay.

May 22d, took one net near Keokuk.

May 23d, took one net near Boston Bay.

May 24th, took six nets near Muscatine.

May 25th, took three nets near Rock Island.

May 28th, took five nets near mouth of Illinois river.

May 29th, took four nets near Pearl.

May 29th, took six nets near Browning.

July 10th, I took two seines and one trammel net in La Marsh drainage district near Pekin.

June 10th, I delivered fish fry to Elmwood, Macomb, and Colchester, Ill.

June 22d, delivered fish to Rockford, Ill.

June 25th, delivered fish to Decatur and Taylorville.

June 29th, delivered fish to Flanagan, Pontiac and Sauneman.

July 6th, I took 2,500 cat fish fry by launch to Meredosia from Havana.

September 1st to 6th, I had charge of Steamer "Illinois" for enforcement of law and took fifty-four nets.

September 8th, I had four fishermen arrested for seining out of season. They paid $200.00 in fines and costs at Peoria.

All tackle confiscated by me was turned over to the sheriff of county where taken and I hold their receipts for same.

I spend nearly all my time in the best of the fishing territory, and I find the fishermen living up to the law much better than when I started with the Fish Commission.

Respectfully submitted,

F. A. Whitman.

PEOPLE, ETC., SUPPLIED WITH FISH.

Date.	No. Fish.	Name.	Address.
Novemb'r 25	200	T. G. Wilson	Decatur
25	200	do	do
12	200	Allen Miller	Marion
12	200	Belle Patton	Mt. Vernon
12	200	John Patton	do
12	200	B. McClaflin	Kell
12	200	Sam I. Schroeder & Co	Altamont
12	200	L. S. Dorsey	Moro
11	250	Paul H. Bierman	Alton
11	250	H. O. Moffett	Modesto
11	250	Fred A. Ford	Waverly
12	200	A. H. Miller	Marion
13	200	Western Brewery Co	Belleville
13	200	do	do
13	200	Heinemann Bros	do
11	250	Wm. Hawkins	Mt. Olive
14	250	S. A. Fairbanks	Thomasville
12	200	Jesse Abrey	Marion
13	200	Edward Leopold	Belleville
13	200	John Rodenheiser	do
13	200	W. F. Gnitz	do
13	200	do	do
13	200	E. W. West	do
13	200	Andrew L. Caldwell	Carbondale
13	200	Wm. Oldenhip	do
13	200	Adam Greishammer	Columbia
13	250	Louis Lummering	Mt. Olive
13	200	M. R. Fakes	Carbondale
13	200	Jas. Mitchell	do
13	200	Caleb Randall	do
13	200	Jesse Randall	Belleville
13	200	G. W. Franklin	Renault
13	200	John S. Bostwick	do
13	200	Wm. A. Hills	Columbia
12	25	Louis Kochetal	Highland
12	250	W. W. Harrison	Collinsville
12	200	Burris Harris	McLeansboro
12	200	Nashville Electric Light Co	Nashville
13	200	F. Mohelenbrock	Campbell Hill
13	200	A. S. Lightner	Percy
13	200	do	do
13	200	The Jolly Fifteen	do
13	200	Fishing Club	Sparta
11	250	M. A. Brayford	Macoupin
11	250	Frank L. Rhodes	do
11	250	The Macoupin Club	Carlinville
11	250	M. Meiners	do
11	250	do	do
9	250	Wm. Latch	Strasburg
8	300	Edw. Austin	Effingham
8	250	S. A. Aumir	Oakland
8	250	W. D. Hogdon	Tuscola
8	200	do	do
8	250	Thos. W. Scott	Springfield
8	200	do	do
11	250	Geo. M. McCormick	Alton
11	250	Escott G. Byford	Brighton
11	250	M. M. Olmsted	Shipman
April 6	200	John Ervin	Tuscola
Novemb'r 30	200	W. F. Gnitz	Belleville
30	200	Cyrus Wolf	Temple Hill
May 26	40	Edwin Harlan	Marshall
Septemb'r 19	80	C. P. Hitch	Paris
19	40	T. E. Habel	Rossville
19	200	do	do
19	80	John Ervin	Tuscola
18	100	Frank R. Covey	Belvidere
18	400	Stephenson County	Freeport
18	200	Fish & Game Com. Stephenson County	do
18	400	John S Goodwin	Naperville
Novemb'r 18	40	do	do
18	40	E. F. Bradford	Quincy
18	100	do	do
18	400	J. E. Williamson	Wataga

People, Etc., Supplied with Fish—Continued

Date.	No. Fish.	Name.	Address.
Septemb'r 17	80	Judge Hindes	Lewistown
17	250	do	do
18	200	F. A. Reynolds	Grays Lake
18	200	N. D. Pratt	do
18	80	Jas. Condra	Henderson
17	150	do	do
17	80	Crescent Lake Club	Alpha
17	100	do	do
Novemb'r 25	100	Nicholas Park Com	Jacksonville
25	100	do	do
25	200	do	do
July 18	100	Danville Rod & Gun Club	Danville
18	100	do	do
18	200	do	do
Septemb'r 3	100	F. G. Wilson	Decatur
3	100	do	do
3	200	do	do
January 25	100	Frank Dorwin	do
25	100	do	do
25	200	do	do
May 20	200	Splatter Dock Fishing Club	Rockford
20	100	do	do
20	200	do	do
Novemb'r 19	200	S. W. Caldwell	Concord
19	100	do	do
19	100	do	do
Decemb'r 9	20	F. A. Gelder	Palmyra
9	20	J. O. King	do
9	20	H. A. Callman	do
9	20	J. W. Duncan	do
Septemb'r 25	250	Citizens Waterworks Co	Quincy
August 13	100	Illinois Southern Railway Co	Sparta
13	100	A. J. McElvain	Murphysboro
13	100	Citizens' Gas & Electric Co	Mt. Vernon
13	100	Jas. H. Severns	Shelbyville
13	150	Cyrus Wolff	Temple Hill
Mar. 10, 1905	200	William Martin	Coalsburg
10, 1905	200	do	do
Apr. 25, 1906	150	Dr. J. R. Lambert	do
25, 1906	200	do	do
Feb. 14, 1907	100	A. G. Lightner	Percy
14, 1907	100	do	do
Decemb'r 10	800	John Flynn	Franklin
10	400	do	do
19	9	H. C. Patton	Flanagin
19	12	do	do
19	20	do	do
Decemb'r 17	250	Illinois Central Railway Co	Monee
17	25	do	do
19	100	A. S. Baldwin, Illinois Central Railway Co	Chicago
19	350	do	do
19	100	do	do
16	350	do	do
16	350	do	do
16	100	do	do
16	350	do	do
17	250	do	do
17	250	do	do
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17	250	do	do
17	100	do	do
17	250	do	do
17	250	do	do
17	100	do	do
17	250	do	do
17	100	do	do

People, Etc., Supplied with Fish—Concluded.

Date.	No. Fish.	Name.	Address.
Decemb'r 27	20	George W. Busse	Edwardsville
27	30	do	do
27	200	do	do
27	200	do	do
Novemb'r 30	400	Hon. John Montluis	Piper City
30	400	do	do
30	400	do	do
30	150	do	do
30	125	do	do
30	200	J. L. Flanigan	East St. Louis

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